

# FOOD SYSTEMS

105

**Modern technology,  
transnationalization, regional  
and national situations**



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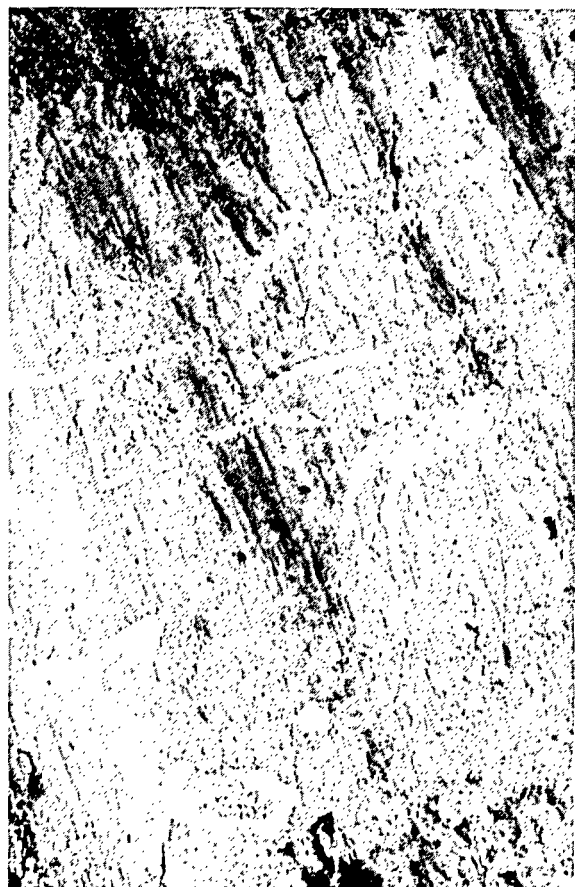
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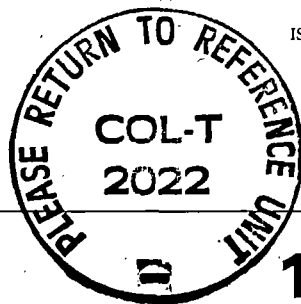
Time and society

*Front cover:* Sower, at the time of the French agronomist Olivier de Serres (c. 1539-1619) who invented the drill harrow. Drawing from *La maison rustique*.

*Right:* Tilling, cave paintings, Late Bronze Age, Valcamonica, Brescia, Italy.

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# The end of agribusiness or the emergence of biotechnology

Kostas Vergopoulos

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The agribusiness question has been evolving since the beginning of the 1970s within a shifting frame of reference, and is continuously in the forefront of both political and theoretical concerns. This evolution began with a critical appraisal of the economic functions of small-scale, marginalized farming, and is continuing today in a world of industrial redeployment, advanced technologies and prospective thinking about the New International Economic Order. The aim of this article is certainly not to describe the whole of this considerable change of ideas, but simply to outline its stages and its significance.

First of all, mention should be made of an important epistemological development which occurred during the 1970s with the introduction of agriculture, at long last, into economic analysis.

Surprising as this may seem, it must be recognized that traditionally, agriculture was the subject of a whole series of specialized disciplines, but was on the outer limits of the economic approach. The specialists in agricultural matters were traditionally, and for the most part still are, sociologists, earth scientists, experts in the rural sector, anthropologists, demographers, agronomists, nutritionists and dieticians, but economists were concerned only to a quite limited extent.

One immediate explanation of why econ-

omists were not specifically concerned with agriculture is probably the fact that, in the major systems of political economy, the scientific model is complete without any organic reference to agriculture. If the agrarian sector is dealt with at all, it is considered in connection with the limits of the economic model, as an area which is exotic in comparison with the functioning of economic mechanisms in the strict sense of the term.

To grasp the significance of this rapid change, its stages must be examined. In the economic literature of the past fifteen years, in very simplified terms (with all the dangers that this implies), six historical theoretical stages which have led up to the present state of knowledge in the agribusiness field can be seen.

## **Agriculture as an external reserve**

The traditional position of the agrarian question was to a large extent determined by the postulates of the French school of Physiocrats in the eighteenth century. Classicists, Marxists, neo-classicists, followers of Weber, liberals and Keynesians, through the impetus given by the Physiocrats, persisted in considering agriculture as a large natural reserve, barely touching the dominant economic system.<sup>1</sup> The only aspect of agriculture that could be considered in

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economic terms was that very small part that conformed to the model of the capitalist organization of production. As far as the remainder was concerned, both large estates and family plots, the economic problem was posed solely in terms of the extension of the areas in which capital operated, through the absorption of new areas and the exclusion of deviant forms. The central idea that shaped thinking about agriculture until very recently was of agriculture as a sphere generating the resources necessary for the non-agricultural sectors, or as a reserve waiting to be absorbed.

In this context, agriculture appeared as an amorphous, residual area, an inheritance from the past which was destined to disappear sooner or later under the absorptive effect of the dominant economic system.<sup>2</sup> The French Association of Agricultural Journalists (AFJA), in its 1981 report, also noted the same problems, posed by agriculture's image today: 'According to many intellectuals and decision-makers, agriculture, whose origins are lost in the mists of time, is a residual activity, a survivor from an archaic world.'<sup>3</sup>

The idea of the deviance of agriculture was illustrated both by the economically 'perverse' behaviour of the large property-owner, and by the no less 'perverse' behaviour of family farming. The property-owner reacted to a rise in prices by causing a decrease in supply in order to earn an income without wasting the fertility of his land. The family farmer reacted to a fall in prices by causing the supply to increase, as he was utterly dependent on earning a predetermined monetary income. In both cases, the 'non-rational' reaction was classified alongside non-orthodox forms and it was considered that these were 'anomalies' of a residual nature, which were in the process of being eliminated through the extension of the economic model.

In addition to the difficulty of conceiving of a structure specific to agriculture, owing to diminishing returns and to the limited supply from productive land, there was the complete elimination of the agrarian problem by a metaphysical reference to the general laws governing economic development, particularly with respect to the concentration of capital and the pre-eminence of large concerns as compared to small and medium-sized ones.<sup>4</sup>

This conception of agriculture, which was the result of a mere transposition of the industrial model, denied itself the means of generating knowledge specific to a separate field. By asserting the validity of a homogeneous economic model, it was no longer possible to take varied situations into account.

One consequence of the transposed industrial pattern was the stress traditionally placed on seeking the economic viability of farms, the basis of micro-economic criteria. The traditional approach to agriculture thus basically remained a micro-economic one. In this context, the traditional attitude towards agriculture remained pre-eminently alarmist: farmers would have to leave the land, farms would have to disappear, mechanization must accelerate progress as regards productivity and capitalization.<sup>5</sup>

However, and this is where the contradictions began, as there was no analysis of agriculture from the point of view of political economy, the national agrarian policy was in fact substituted for it. In other words, contrary to the postulates of the dominant micro-economic approach, there was a persistent tendency to conceive of agriculture in terms of state intervention, and not in terms of private-sector economics in which the state would simply be a superimposed factor.

Seeing that development in accordance with the industrial pattern was a long time coming, it was concluded that state intervention was necessary in order to accelerate modernization. However, at this time, European agriculture was the victim not of being outdated but, as it so happens, of modernization. As far back as the 1960s, problems of overmechanization, of agricultural productivity that was increasing more rapidly than the social average, and of excess output in an increasing number of basic products, were being reported more or less everywhere. This agricultural overefficiency occurred under the system of family farming, and not at all under the system of large concerns using wage-earning employees and capitalist investment.

On this point, it would be relevant to recall that despite traditional theory being in favour of entrepreneurial agriculture, the agricultural policy of the European and North American countries had as its avowed aim the consoli-

dation of family producers. The explanation given by theoreticians, Marxists, technocrats or others, supporters of the entrepreneurial view of agriculture, has always been that the state gives in too easily to cliental and demagogical demands. They claim that the state's policy in favour of farmers lacked any economic justification and was even openly anti-economic, being subject only to the electoral concerns of the political parties in power. Even when the Mansholt and Vedel reports<sup>6</sup> confirmed, at the end of the 1960s, the virtual perennality of family units within the EEC, theoreticians immediately saw in that an opportunist capitulation to the existing social situation, but a capitulation that was contrary to economic interests.

### **The social integration of agriculture**

The divergence between the traditional view and national agricultural policies thus appeared to be due to inconsistency on the part of politicians. From the beginning of the 1970s, people began to become aware that the agricultural economy itself was a long way from moving spontaneously towards its own form of separate entrepreneurial practice. On the contrary, modern states, by showing consideration for family farms, were only endorsing an economic fact. From that time on, it was seen that the small farmer assumes functions that are not only political and social but economic as well. Admittedly, agriculture continued to be conceived of as on the outer limit of the economic model, but the limit was shifting. For the first time, the idea of an internal boundary was emerging, which shifted and was re-created with and by the development of the economic system.<sup>7</sup>

Family farming is not an entrepreneurial function in opposition to work for wages. However, this is no longer recognized as being enough to classify this sector as one of the exotic ones. The notion of the economic system was reformulated, to enable it to take into account deviant forms, heterogeneity and differences.<sup>8</sup> Bringing divergent forms into contact with one another was now considered not only as a real situation, but also as a

prerequisite for vitality in the economic system. The deformities were thus not residual, but were constantly reconstituted, enlarged and developed by the economic system itself. Externalities were still discussed, but in a now different sense. It was a matter of the shifting of internal barriers, of internal externalities, of the periphery in the centre. The deviant sphere was no longer considered as an opportunity to extend the economic system, but as offering potential for injecting new life into the system.

The limitations specific to agricultural production, that is, the limited supply from productive land and the law of diminishing returns, meant that the agriculture corresponding to capital could not be described as capitalist agriculture, but rather agriculture based on the family unit.

The economic approach had thus become respectable where agriculture was concerned, and macro-economic analysis finally made it possible to explain the intersectoral logic of the localization of profits outside the agricultural sector. Farmers supported by the state can continue producing, even if prices fall—as they have no alternative uses for the capital they employ—and can also continue to invest, even if their profits drop, since if need be, they are content with earning an income that is the equivalent of a salary. Consequently, the micro-economic deficit of the small farmer constitutes an advantage in the macro-economic sense, for the social partners involved in the small-farm economy. The farmer, who is outside the capitalist forms yet part of the system of capital, makes it possible, through his economic weakness, to localize profits in non-agricultural sectors. This becomes possible not through exploitation, but merely through the functioning of the laws of economics. The transfer of wealth does not mean denying the laws of economics, but on the contrary constitutes their hidden dimension.

This is the point at which, for the first time in the context of the agrarian problem and in economic thinking, the specific nature of agricultural output—i.e. *food*—is taken into account.

Until then, discussions regarding the position or the future of agriculture disregarded the social nutritional function assumed by agricultural products, showing a preference for

criteria internal to the organization of agricultural production units. The theoretical difficulty posed by the coexistence of divergent forms having been overcome, and the issue having been tackled of the localization of profits in the direction of intersectoral transfers, it was at last possible to view the highly strategic position of agriculture with respect to the economic system. It determines in the final analysis the conditions for the reproduction of the labour force in society as a whole. Likewise, the rate of profit in a given society is directly dependent upon the wage-rate, which in turn is dependent upon the social cost of production and the social productivity of the food-producing sector.

Through the intermediary of food, the question of agriculture finally took up a position at the heart of economic analysis. As the price of food determines in the final analysis industrial labour costs, it also indirectly determines the rate of profit and the level of industrial competitiveness, both on the internal and on the international markets.

The traditional difficulty of interpreting agriculture in a positive conceptual way in terms of political economy was thus partially bypassed through the emergence of a 'political economy of food'. The importance of this conceptual innovation should appear more clearly in the following stage.

## Integration through agribusiness

It was towards the middle of the 1970s that the new concept of 'agribusiness' took firm shape. The publication of several pioneering works may be noted, particularly in the United States, as far back as the 1950s,<sup>9</sup> but the formation of a concept, which presupposes systematic and sophisticated preparation, could not take place until later.<sup>10</sup>

The concept of agribusiness was immediately successful and opened the way for an extremely rapid change in people's thinking. This success could be explained by the fact that the new concept made it possible to substitute integration for the traditional sectors. It was realized that the output of agriculture is not directly consumable, but requires an additional stage of industrial preparation. Simultaneously,

there was an awareness that the food industries can not only process agricultural products in order to make them ready for consumption, but can also shape consumption standards downstream and primary production programmes upstream.

As soon as agriculture was conceived of together with its nutritional functions, such functions were recognized as decisive because they were directly linked to the economic system, while agricultural production in the strict sense of the term was reduced to a secondary activity. The very concept of agriculture now appeared problematic, in the sense that the sphere of primary production was now divided up into separate parts, individually incorporated in the agro-industrial complexes.

To some extent these problems already existed and were apparent elsewhere, but they belonged more to the sphere of the industrial economy. The concept of agribusiness was an innovative one in the sense that it gave prominence to an economic fact that had not been expressed in a conceptual form. While the notion of agribusiness distinguishes food industries from the rest of the industrial economy, it nevertheless makes it possible for the industrial economy to take over the sphere of primary production, through the concept of integration. In short, agribusiness, while taking over agriculture, and while making itself distinct from the other branches of the industrial system, remains without any doubt an industrial sector.

Naturally, the conceptual unification of the agricultural and food spheres was possible only when a high level of mass consumption opened the way for the homogenization of food structures and for the standardization of the needs and resources available to them. In fact, this homogenization made the idea of the industrialization of food a practical reality. As it is not possible to do what economists have long dreamed of doing, which is to industrialize agricultural production itself, industrialization is today being applied to the processing of its output.<sup>11</sup>

The transition from agricultural production to agro-industrial production, as Malassis notes,<sup>12</sup> implies the transition from dispersed and fluctuating output to concentrated, standardized output produced at a constant rate. Thus, the old laws relating to the limited supply



## *COUNTRY*

American agriculture, despite its being the world's most efficient, is currently going through a severe crisis. Above, a scene from *Country*, an American motion picture about farmers fighting for the survival of their enterprise. Buena Vista Distribution.

from productive land and to diminishing returns are partially bypassed by the industrialization of the supply of food products. Agro-industry in fact makes it possible to homogenize a series of diversified provisions and, by storing stabilized products, ensures relative security and greater regularity in the supply of food.

An unexpected reversal of ideas had just occurred. The nutritional function was introduced into the agricultural debate in order to establish a link between agriculture and the economic system. However, agriculture very rapidly asserted its position at the outer limits of the economic system. Once its economic function had been fulfilled, the agricultural sphere disappeared, to re-enter the industrial complexes piecemeal. Agriculture ceased to be considered as an exotic reserve: it was included,

but diffused. The topic of agriculture was now only approached indirectly, through the problems of agribusiness, or even from an industrial viewpoint.<sup>13</sup>

### **The organization of the stages of production**

The constitution of the agribusiness network ended by posing a series of problems relating to the organization of the space and process of production, the relations between the internal stages of the network, and its effect upon the economic system.

With regard to production, it has been noted that with the development of agribusiness, the relative importance of the primary

sector is even further reduced. The agricultural value added in the value added of the final product was no more than 25 to 28 per cent in the EEC countries in 1982.

In addition, as Malassis notes, it was observed with amazement that the agribusiness sector, though less capitalized than the overall economy, was much more internationalized than the latter. There are, indeed, several indicators to show that agribusiness is a favoured area for transnational companies, particularly the indicators of profit concentration, investment and capital formation.

In other words, the emergence of agribusiness looks like being inseparable from the establishment of a transnational food economy, whose props would naturally be the transnational companies.<sup>14</sup>

In these circumstances, the notion of agribusiness is leading to a spectacular return to the micro-economic approach, to analysis from the viewpoint of the economy of the firm. However, it should be noted that on this occasion, the analysis is no longer based on the farm, as was the case in the traditional approach, but on the extensive and many-sided industrial concern operating in the sphere of food, which quite often takes on the dimensions of a transnational company.

The new food economy is based on an extremely high coefficient of transnationalization in the strict sense of the term, that is, the transnationalization not only of the ownership of the capital operating in the sphere, and not only of the production process, but also of the cycle of the food product proper. In this case, we are faced with a superior and deep-seated form of transnationalization, greater than that of the flows of capital seeking cyclical adjustments. Indeed, what we have here is a trend of capital being expressed at the level of the deep-rooted structures of the food sphere and is thereby determining the direction in which the economic system as a whole will subsequently develop. The economic indicators available to us confirm the extent and far-reaching nature of this process of transnationalization in the agribusiness network: rate of profit, rate of investment, rate of capital formation all above average.<sup>15</sup> The advantages of agribusiness are so considerable today that an increasing number of large firms, not concerned with food,

are directing at least part of their activities towards this sector. This is true of major engineering firms (Fabrimétal), and firms in the automobile industry (Volkswagen, Renault, Fiat, etc.), in aeronautics (Boeing), glass (BSN), petroleum (BP, ELF-ERAP, etc.), and chemicals (Coppée, ICI, etc.). An immediate explanation for this redeployment of capital towards food is apparently the attraction of higher-than-average profits in a world economic context where there has been a general drop in the rate of return. However, a more far-reaching explanation would give more prominence to the concern of major firms merely to be present in a new sector with exciting, albeit as yet incalculable, prospects and occupying a strategic position in the necessary redeployment of the world economy.<sup>16</sup>

The industrialization and transnationalization of food is opening it up to technological innovations, particularly during the present period of prolonged economic recession, one of whose features has been the intensification of technological research. The emergence of new standards of food consumption among workers could already constitute a major innovation—a profound change of diet linked to the reorientation of the opportunities and techniques of food production. It is today admitted that technological innovation in the food sector, through the impetus given by the major food companies, may occur at all levels of the chain: (a) new food products; (b) new manufacturing procedures; (c) new markets.

In addition, the relations between the successive stages in the preparation of food products are today being extensively modified by the existence of new agribusiness conglomerates. The primary production of farmers is losing its autonomous status, both when it comes to drawing up production programmes, and when it comes to organizing working methods and choosing production techniques.<sup>17</sup>

During the previous stage, the farmer was socially integrated through the mechanism of the credit granted to agriculture and the means of intervention afforded by the state's Keynesian policy. The agricultural sector was integrated as a whole, on an impersonal basis. Today, the new type of social integration calls for financial responsibility for the development of primary production to be assumed by the



Contrasting with the crisis of Western agriculture, partly stemming from production excesses, the tragic reality of hunger which affects millions of people in certain parts of the world. S. Salgado Jr/Magnum.

agribusiness companies. Integration is no longer anonymous as it was previously, but personalized through the emergence of the companies. It uses as its means contracts integrating the direct producers and it no longer corresponds to the social pattern, but tends to conform to the micro-economic pattern of the company.

Under the previous forms of social integration, the socialization of the small farmers' output was carried out by the market mechanisms. In the new forms, which are predominantly micro-economic, the incorporation of agricultural output takes place outside the market, through the emergence of a new phenomenon that we shall call an economy of an integrated type. The corporate dimension of this type of economy results from the fact that each agribusiness concern has its own farmers, who produce exclusively on the basis

of production programmes drawn up by the industrial company.

A consequence of this is the strengthening of corporate forms of organizing and supervising the agribusiness sphere: contracts for integration, the possibility of checking in advance the materials for agricultural production, monitoring of supplies and sales, and the means of finance. In other words, all the activities making up the network are supervised and planned outside the market, in accordance with the micro-economic calculations of the company. The relations between the production stages within the network thus become less competitive, having been settled outside the market by an economic structure in the form of a cartel.

It should nevertheless be mentioned once again that this cartelization/integration does not alter the fact that production risks are still, as

they have always been, the affair of the direct agricultural producer. Although the farmer produces in accordance with programmes imposed by the industrial company, with a technology that is also imposed and with borrowed funds, he nevertheless continues to assume sole responsibility for the production risks, as if he himself were the entrepreneur.

Finally, with regard to the effect of agribusiness on the economy as a whole, let us mention once more the strategic function of the food economy. The conditions governing food production make it possible to define the proportion of the national product that is recognized as being necessary for the reproduction of the labour force in society as a whole. In a capitalist economy, the entrepreneur only begins the production process if he knows in advance what the production costs and production structure will be. The labour-cost factor is largely determined by the level and structure of working-class consumption. This consumption is determined by the comparative productivity of the food and non-food sectors. From this point of view, the effect of the food sector's productivity on the formation and functioning of the overall economic system is decisive.

## **The economic and food crisis**

The emergence of the concept of agribusiness towards the end of the 1970s is inseparable from the emergence of the economic crisis in general and the crisis of the food systems in particular. The problems arising with respect to agribusiness networks did in fact emerge at approximately the same time as the problems of food security. There is every reason to suppose that the undeniable prosperity of the agribusiness companies, particularly the transnational ones, is not unrelated to the helplessness or perplexity that was characteristic of national agribusiness policies during the same period. From an overall point of view, the food problems of the peripheral countries are at the opposite end of the scale to those of the countries at the centre. In the industrialized economies, the difficulties incurred by food systems are expressed in practical terms by the stockpiling of surpluses, which gives rise to a

war of subsidies, an acute conflict regarding external markets, and drastic efforts to limit output. In the peripheral economies, on the contrary, the difficulties of the food systems take the form not of a crisis of surpluses but of shortages. There is famine or malnutrition on an unprecedented scale. It is very tempting to link the two. The surpluses at the centre and the shortages on the periphery could well be evidence of failure of a particular world food order and of the need to seek new bases on which to establish a different food order.<sup>18</sup> The state of turmoil of agribusiness capital during the present international crisis suggests that the agribusiness sector is seeking to stabilize at a new level, which would permit the transition to a higher rhythm of accumulation for the economy as a whole.

In addition, in the Third World countries, the increasing food shortages are thought of as misfortunes resulting from the emergence of the new food economy on a transnational basis. The transnationalization of the food cycle leads to increasing shortages for the weak links in the chain. The concept of food security is not really a humanistic idea, but arises directly from the necessities of the public finances of the countries affected by a shortage both of food and of foreign currency. The urgent problem of these countries is how to save foreign currency on the means of satisfying the basic needs of the population. Food security policies, within a national or regional framework, and with the minimal use of foreign currency, can give effective support to economic growth and industrialization.

Next to the argument regarding foreign currency, there are also, particularly in France, arguments regarding the security and regularity of food supplies, without which any development project would be quite simply a risk. Stress is indefatigably laid on the fact that food security primarily involves income security for farmers.<sup>19</sup> On the other side, there are the ultra-liberal stances which, on the basis of problems relating to consumer protection, have no hesitation about being governed by the accessibility of currency and by the world market. The consequence of this policy, wherever it is applied, is inevitably to aggravate the food situation. The limitation of national food consumption becomes an objective of ultra-liberal

policy, with the aim of maximizing the exportable share of the output. This policy, which successfully imposes spectacular restrictions on the population's most basic form of consumption, finally gives rise to extremely acute social tension. In the final analysis, during a period of prolonged recession such as the world is currently undergoing, it is safer for a country to save foreign currency by avoiding expenditure, after the development of national production as a substitute, than to hope to gain foreign currency through chancy exports.

Let us add that in this discussion between the ultra-liberals and the supporters of food autonomy, the idea of agribusiness is not challenged by either side. A keen supporter of the policy of food autonomy, the former Mexican President, Lopez-Portillo, had even thought of building up a national food system with the support of the transnational agribusiness companies. However, it is now obvious that the strategy of the large transnational companies is not always identical with that of nations seeking autonomy in food so as to save foreign currency and secure conditions for durable economic growth.

The possibility of a slow-down in the international trade in food products, which is expected to occur by the year 2000, is already leading the major firms to act in new and original directions. According to W. Leontief, there is a possibility that the political desire of states to secure greater independence with respect to food will bring about an increase in the number of the barriers to world trade in agribusiness produce.<sup>20</sup> The market opportunities that would then remain for transnational firms would logically be found in circumventing the barriers limiting trade in products by developing trade in the factors of production and in new technologies.

### **The emergence of biotechnology or the end of agribusiness**

The emergence of biotechnologies during the 1980s might well shake the foundations of agribusiness, including, of course, the most fundamental concepts and all the aspects we have so far mentioned. As biotechnology progresses and moves from the strictly scientific

sphere to large-scale production applications, new forward-looking thinking is emerging about the economic and social consequences of these processes particularly in relation to the present international recession and the prospects for emerging from it. There is no doubt that at the moment, though these consequences are important, it is difficult to calculate with any accuracy what they will be.

At a conceptual level, the notion of the network made a positive contribution to the discovery of biotechnology as an issue, even though it might appear to be the main victim of this transformation. It should be recalled that, from the viewpoint of economic analysis, the idea of the agribusiness network enabled the unevenness, rigidity and imbalances of primary sector production to be partially circumvented. It made it possible to unify, without however homogenizing, the stages of the manufacturing process of the final food product.<sup>21</sup> Agricultural activity was thus able to break out from the concept of traditional reserve, and was recognized as being a function of the overall economic system.

However, whereas the concept of the network made it possible for agriculture to become integrated in the economic system, it in fact established the absolute predominance of the industrial side of things. In the network, the industrial side of things was strengthened, whereas the agricultural side, although it was integrated, appeared weakened. OECD studies noted this process, but hastened to dispose of it under the debatable concept of 'maturation'. They assumed that during the 1970s, agriculture was taken over by the economic system, and 'thus came of age by losing its identity'.<sup>22</sup>

The workings of this contradictory process with regard to agriculture are what is leading today to the biotechnological transformation. The operational unity between the stages of agribusiness production is at present threatened with profound upheavals, which is tending to strengthen the industrial side even more, and to weaken the agriculture side to a still greater extent.

Continuity between the network idea and biotechnology, heralding the crisis of the traditional networks, is surely to be found in the development of the micro-economic approach in the industrial company. Biotechnology



could make it possible for the industrial factor which is predominant in the network, to exclude virtually all others.<sup>23</sup>

As the production of primary products, both plants and animals, is entirely dominated by the industrial side, its very existence is today threatened by biotechnology. Its most basic structures are threatening to disintegrate. The future is looking increasingly problematic for the direct producers of traditional raw materials. The technological transformations that are under way reject and render obsolete traditional production techniques and sources of supply, and this is already causing great disarray among the economies of countries or sectors whose output consists of primary products.

Whether it is a question of using biological agents or of new recombination or genetic engineering techniques, present-day primary producers will have to contend with serious problems in adjusting to a qualitatively new demand.<sup>24</sup> Likewise, in several cases, biotechnological change could enable industrial food companies to assume financial responsibility themselves for the production of the raw foodstuffs that they require. The industrialization of raw materials, privatization, the merging of the stages of food production—these are the means towards the elimination of the stage of primary production within the agribusiness network.<sup>25</sup> However, should this happen one day, the concept of the network will surely also break apart.

It may not be entirely unconnected that as the concept of the agribusiness network was emerging during the second half of the 1970s, and the integration of the stages of food production was taking place, agriculture itself was plunged into an unprecedented crisis. In the United States, where the biotechnology approach is developing with increasing speed, farmers are experiencing a serious and multiple crisis. Agricultural production has been affected by surpluses, making prices fall even further, while the future of the food biotechnologies looks set to flourish. American farmers, who at present are deep in debt, are now being encouraged to accept compensation for not producing. The indebtedness of American farming is now recognized as a more serious threat to the stability of the American

financial system than the country's international debt as a whole.<sup>26</sup> The agricultural crisis is reflected in turn among the lender banks and agricultural equipment firms, which are now paralysed. The demand for agricultural equipment has been plummeting since 1979. It is clear today that the firms producing agricultural equipment are not suffering simply from a cyclical crisis but from a 'permanent contraction' of the markets, which puts them in a situation in which the capacity utilization rate is continually falling.<sup>27</sup>

Admittedly, this unprecedented situation in agriculture can be seen as a crisis of adjustment that appears to be a logical consequence of the formulation of the agribusiness networks. However, this explanation could account for only quite a small part of what is happening.

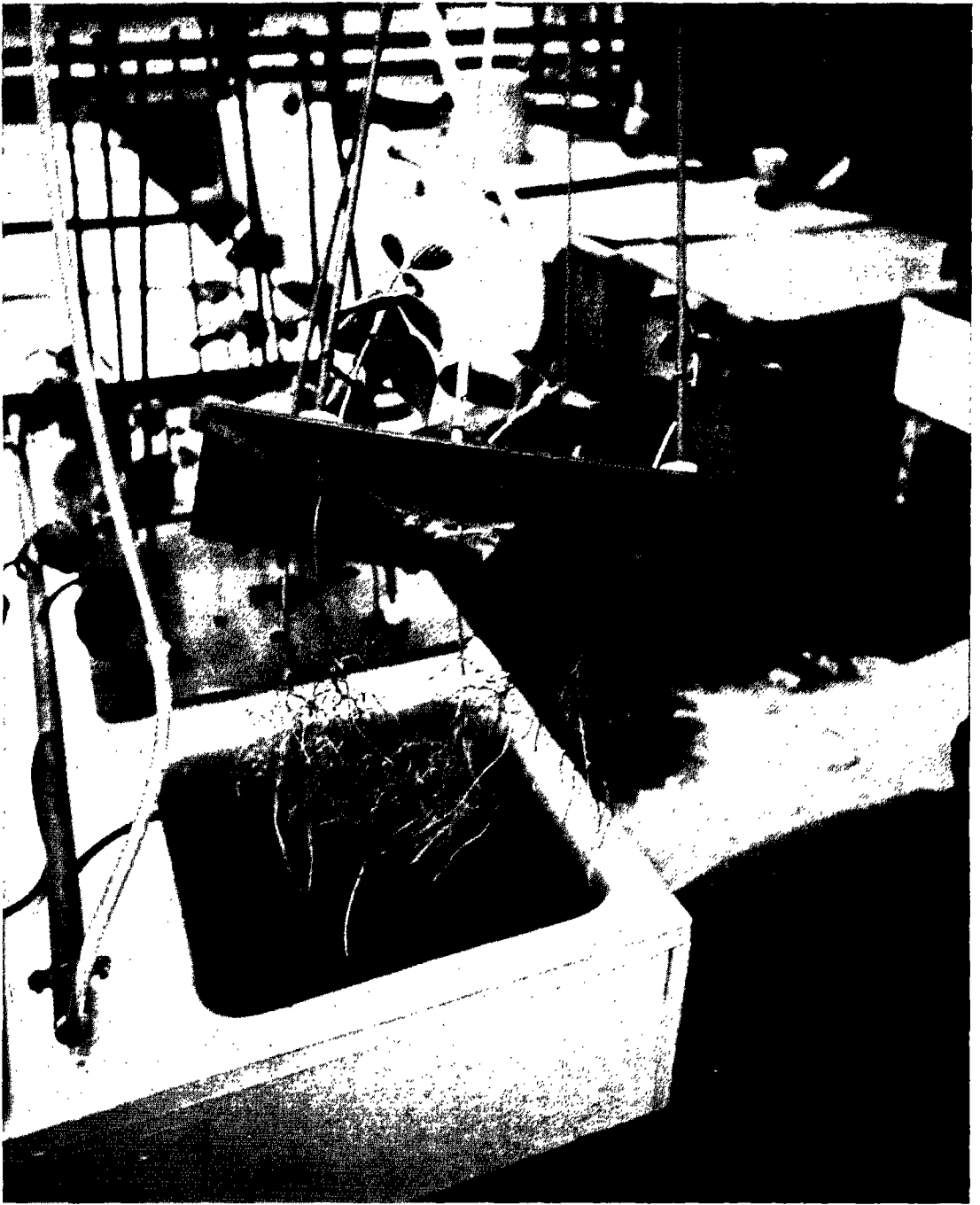
In fact, the most basic sectors of present-day agricultural production are potentially threatened. The concepts of agriculture or stockbreeding are threatened with disintegration, as is the concept of production in the case of those activities at present constituting the primary sector. Likewise, the concept of 'producer country' is also disintegrating, just like the concept of 'primary sector', right down to its most basic micro-economic applications, that is, to the concept of the farm.

A large number of American farms are at present being openly required not to adjust, but simply to disappear. The new technologies are broadening the sphere of the industrial concern and proportionately narrowing the agricultural sphere, often to the point of destruction. It is obvious that in these circumstances, adjustment goes beyond the issue of the quantities or quality produced and poses the problem of a deep-seated restructuring related to the re-direction of the productive system as a whole.

To sum up, implicit in the application of biotechnologies in agribusiness could be far-reaching changes of the very greatest importance:

The disintegration of the structure of agricultural employment and its reduction to extremely low levels, due to the unprecedented increase in productivity.

The disintegration of the majority of the traditional networks, due to the new concordance between the stages of production.



The current technological revolution in agriculture: soya bean seedlings, grown at the Institut National de Recherche Agronomique (INRA), Versailles, France, through continuous irrigation of seedlings by a nutritional liquid, without soil. A variety of vegetables are grown with this technique, which eliminates climate hazards, with lower production costs than traditional agriculture. J. M. Charles/Rapho.

The constitutions of new networks, most of which will be in the sphere of industrial production.

In these circumstances, the possible disintegration of the very concept of agriculture, as well as of that of production or sector in the case of 'primary' activities, but also the disintegration of the concept of the farm.

From this point of view, after the historic emergence of agrochemistry and the green revolution, biotechnology will turn out to have been the third and most important phase in the revenge taken by industry on the law of the limited supply from productive land and on that of diminishing returns, which had traditionally given the agrarian economy its specific character.

However, if the concept of agriculture disintegrates, one might well ask whether that of agribusiness might not also suffer the same fate as a result. It must be observed that the anticipated disappearance of the concept of agriculture, in the context of the emergence of the biotechnologies, is not a result of the industrialization of agricultural production itself, but rather a result of the extension of the industrial company's sphere of production. In other words, agriculture is not becoming industrialized in the way that economists have long dreamed about. It is quite simply going to disappear following the extension of the industrial field.

Of course, the emergence of biotechnology is now one of the consequences of the prolonged economic and energy crisis and forms part of the major technological transformations that are appearing on the horizon. From the economic point of view, we could say in simplified terms that biotechnology may take the same path as robotics, micro-electronics, computer technology and lasers: leading to a drastic reduction in the work-force, to the overcoming of the uncertainties, rigidities and imbalances traditionally linked to primary production, and to an unprecedented increase in output. If these conditions became established, it would probably turn production based on the use of biotechnology into a fully fledged form of industrial production.

However, it should not be forgotten that one of the features of the present economic context is a lasting contraction of both

internal and international markets. Likewise, the present adjustment policies adopted in most countries in fact only herald additional restrictions for the markets. Consequently, surpluses can only continue to increase on a worldwide scale. There would be very good grounds for supposing that the costs incurred by this crisis of surpluses would be laid at the door of the weakest links in the agribusiness chain—the Third World and the farmers in the countries at the centre. The effect of biotechnology in this context would only be to aggravate the problem of agricultural surpluses. Biotechnology makes it possible to respond to the present reduction in markets by an enormous increase in productive capacities. This is the significance of the current emergence of the advanced technologies. It is a rather unusual response in times of crisis or recession.

It must be understood that the emergence of the advanced technologies does not really point to a way of overcoming the present crisis, but is only a consequence of the now widespread race to reduce labour costs, thus making it possible to take up advantageous positions in anticipation of the post-crisis period.

It is important to note that the basic impulse to pursue research in biotechnology is coming in the first place from the industrial chemical and pharmaceutical complexes linked to the oil cartel.<sup>28</sup> These groups originated the rapid development of research in biotechnology and its applications in agribusiness.<sup>29</sup>

In all likelihood, biotechnology, as a series of production techniques, already appears to offer a possible fall-back position and an interesting possibility for future redeployment for the giant firms operating in the three branches mentioned above.

It has to be admitted that the potential disintegration of traditional agribusiness on a worldwide scale could lead to an increased effort by the peripheral countries to achieve national or regional self-sufficiency in food. This is an option which is envisaged because of its economic advantages for nations and because of the criterion of regularity and security in supplies.<sup>30</sup> However, the extension of a *world system of biotechnology* might establish new forms of dependence resulting simply from a shifting of the old ones. For some years

now, several American economists have been presenting biotechnology as the necessary technical prerequisite for solving the problem of self-sufficiency in food in Third World countries, but the cost of biotechnology research is absolutely prohibitive for such countries. It is today admitted that biotechnology often calls for the same level of investment as robotics. Consequently, the biotechnological option for the peripheral countries would have meaning only inasmuch as it would open up the national market to transfers of technology from the major countries such as the United States and Japan which are the leaders in this field. Thomas A. Callaghan Jr, an industrialist and adviser to the United States Government, noted that markets which are closed to products are invariably open to technology. Even those that are tightly closed will open up to Western technology. For this to happen, Western countries must grant them the funds they need for purchases. While the United States represents the dominant technological power in the world, even closed markets will be open to American technology.<sup>31</sup> If this argument applies to a country such as the United States, it also applies to the major transnational companies.

It is therefore clear that given the present world economic structure, a slow-down in trade in agribusiness products should lead to an intensification of trade in technology and the factors of production. These new forms of technological dependence can already be illustrated by the examples of the world trade in seeds or agrochemical products, and by the rapid expansion of the world market in licences and patents.

Consequently, the emergence of biotechnologies in the world food structure, while disrupting the traditional networks of dependence, is establishing many others at the level of the factors of production.

In the final analysis, the recently constituted transnational agribusiness economy is today threatened with disintegration by the emergence of a world system of biotechnology that is also transnational.

Biotechnology today represents a major mutation, making it possible to strengthen the

pre-eminence of the countries of the North and the transnational companies over the countries of the South. Biotechnologies, like the advanced technologies as a whole, are not linked to the emergence of a New International Economic Order, so insistently demanded by the Third World countries, but, on the contrary, are strengthening the old order that was thought to be superseded. In fact, the countries at the centre are now playing biotechnology against the New International Economic Order; the card held by the countries of the South.<sup>32</sup>

## Conclusion

During the last fifteen years, the concept of agriculture has undergone a remarkable change. Traditionally situated outside the economic system, it has been introduced into the centre of economic analysis, particularly through its inclusion in the recent debate about wages and the reproduction of the labour force. The intermediary factor that made this link-up possible was the concept of the agribusiness network. Primary sector activities were incorporated in accordance with the standards of the micro-economic mechanisms of the industrial companies. This type of integration had an unexpected consequence for agriculture, which was the loss both of its autonomy and its identity. The present-day technological revolution is now threatening to deliver it a death-blow and completely eliminate it, both as a specific sphere of production and as a specific type of enterprise. If this were to happen, the concept of agribusiness would no longer have any *raison d'être*. Industrial food production would take its place, with new networks situated entirely within the industrial sphere and recognized as being fully industrial.

In this astonishing scenario, agriculture will not be industrialized, as some had long been anticipating, but will be replaced by industry. It will not be the triumph of capitalist agriculture, but the replacement of all forms of agriculture, capitalist or family, by industry.

[Translated from French]

## Notes

1. The expression 'natural reserve' is also noted by Yves Tavernier, see *Le Monde* (Paris), 8-9 November 1981.
2. J. Grall ('L'agriculture aujourd'hui', *Le Monde* (Paris), 9 January 1985) also notes that, according to the traditional image, 'agriculture lies outside French society. ... It is itself a society outside society.'
3. Ibid.
4. See A. Manoukian, 'Du nouveau dans l'agriculture capitaliste', *Recherches Internationales*, No. 41, 1964; see also L. Perceval, *Avec les paysans pour une agriculture non capitaliste*, Paris, Editions Sociales, 1969.
5. C. Servolin, 'Pour des nouvelles orientations agricoles', *Le Monde* (Paris), 22 January 1982.
6. Rapport Vedel, 'Les perspectives à long terme de l'agriculture française (1968-1985)', Paris, 1969.
7. S. Amin and K. Vergopoulos, *La question paysanne et le capitalisme*, Paris, Editions Anthopos, 1974.
8. The non-antagonistic co-existence of the varied forms of agricultural production were stressed by C. Servolin, 'L'absorption de l'agriculture dans le mode de production capitaliste', *L'univers politique des paysans*, Paris, A. Colin, 1972.
9. R. A. Goldberg, *A Concept of Agribusiness*, Cambridge, Mass., Harvard, 1957; and *Agribusiness Co-ordination*, Cambridge, Mass., Harvard, 1968.
10. See in particular L. Malassis, *Economie agro-alimentaire*, Paris, Cujas, 1979; J. Bombal and P. Chalmrin, *L'agro-alimentaire*, Paris, Presses Universitaires de France, 1980.
11. It is agreed that the industrialization of food was the most spectacular achievement of the system of agribusiness companies, see *Conjoncture*, Paribas, February 1984.
12. Malassis, op. cit.
13. *Conjoncture*, op. cit.
14. G. Arroyo, 'Les agents dominants de l'agro-capitalisme', *La gestion des ressources naturelles d'origine agricole*, Paris, Editions Techniques, 1983.
15. See K. Vergopoulos, 'Capitalisme et alimentation', *La gestion des ressources naturelles d'origine agricole*, Paris, Editions Techniques, 1983; see also Arroyo, op. cit.
16. Ibid.
17. G. Arroyo, 'Vers la disparition des activités rurales autonomes', *Le Monde Diplomatique* (Paris), July 1979.
18. See, *inter alia*, J. Bourrinet and M. Flory, *L'ordre alimentaire mondial*, Paris, Editions Economica, 1982.
19. See, *inter alia*, E. Pisani, 'Motion for Resolution on the Possible Improvement to the Common Agricultural Policy', European Parliament, Working Document, 23 January 1981; see also M. Rocard, Speech at the World Food Council, Addis Ababa, 12 June 1984.
20. W. Leontief, *L'expertise*, Paris, Editions Dunod, 1978.
21. However, this integration of primary-sector activities in a system of industrial production did not put an end to the grievances of business circles in the agribusiness industries. It is stressed in these circles that 'agribusiness industries are still exposed to risks, with regard to the quality and quantity of agricultural supplies, and it is for this reason that mass production presents them with difficulties', see article by C. Dardenne in *Économie et Finances Agricoles*, January 1984.
22. See the OECD's prospective study: 'Issues and Challenges for OECD Agriculture in the 1980s', p. 53, Paris, 1984.
23. This prospect is also mentioned in the journal, *Biofutur* (No. 23, 1984): 'The biotechnologies imply the liberation of the agribusiness industries from agriculture.'
24. OECD, op. cit.
25. F. Buttel, *Biotechnology and Agricultural Research Policy: Emergent Issues*, Ithaca, N.Y., Cornell University Press, July 1984.
26. Stewart Fleming, 'Crisis in the Richest Granary in the World', *Financial Times* (London), 23 October 1984.
27. According to the *New York Times*, 11 November 1984, present sales of agricultural equipment represent only 45 per cent of their 1979 level.
28. The report of the Institute of International Agribusiness Management notes the dependent situation of this sector: 'The agribusiness sector as a whole is exposed to a serious danger, that of becoming technologically dependent upon pure chemistry or pharmaceuticals'; see *Bulletin BIO*, No. 30, October 1983.
29. It has been calculated that only 15 per cent of biotechnological inventions are freely sold on the market by small biotechnological research firms. Giant firms provide 85 per cent of the expenditure on biotechnological research, either directly or indirectly, through research or licensing contracts.

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30. Leontief, op. cit.

31. T. A. Callaghan Jr, *US/European Economic Co-operation in Military and Civil Technology*, p. 96, Georgetown University, Centre for Strategic and International Studies, September 1975, quoted in D. Ernst,

'Innovation, transferts internationaux de technologie et redéploiement industriel, perspectives pour la décennie 1980'; Symposium: 'Vers quel nouvel ordre mondial?', Université de Paris VIII, September 1983.

32. Excellent studies agree that at the present time, the biotechnological issue is a long way from having reached an irreversible stage, and that in the final analysis, what happens to it will depend on the kind of political forces that succeed in coming to grips with it: see Buttel, op. cit.

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# Modern food technology: industrializing nature<sup>1</sup>

Bernardo Sorj and John Wilkinson

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## Introduction

The 'homogeneity' and 'industrialization' of the modern food system is often compared unfavourably with the 'diverse' and 'natural' consumption pattern of pre-industrial societies. In fact, however, the rapid expansion of the modern food system owes much to its profound continuity with pre-existing food habits and technologies. While hunting and gathering societies were characterized by the diversity of their menus, the development of agriculture led to a radical reduction in the variety of man's food base. The world's edible plant species have been calculated as approximately a quarter of a million but of these only some 1,500 have been incorporated into agriculture. In agricultural societies virtually the whole of human consumption was limited to thirty plants, with eight basic crops accounting for three-quarters of the human diet,<sup>2</sup> and only three crops—rice, wheat and maize—responsible for 75 per cent of cereal intake.

This brutal narrowing of man's food base would appear to be the precondition for geographic expansion away from the world's limited centres of genetic diversity, and for the consolidation of sedentary urban civilizations. Selection and improvement of a reduced number of plant types, versatile both in their

adaptability and productivity, were accompanied by the elaboration of a variety of food technologies which advanced the cooking technologies for immediate consumption developed by hunting and gathering societies. Agricultural societies, based on a radical simplification of the ecosystem, and a consequent dependence on the seasonal productivity of a limited number of nature's products, could only survive to the extent that food technologies advanced beyond the problems of immediate consumption to those of preservation. The privileged products of man's food base therefore were selected as much for their susceptibility to preservation techniques as for their agricultural productivity and adaptability.

While the underlying objective of preservation was the unifying factor, the specific characteristic of each agricultural product demanded the development of a whole range of different food technologies. Depending on the product, organic deterioration was combated variously through drying, crushing, heating or the addition of counteracting products. In each of these processes the original agricultural product underwent transformation, to an extent that varied according to the conditions for each product's preservation. The demands of preservation therefore generated a diversified food-processing sector in pre-industrial

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societies, creating with it a series of secondary products, establishing thereby a derivative diversification of man's food base, extending to different types of breads, cheeses, jams, beers and wines.

For the simple drying out of meat and the application of salts and spices, scarcely distinguishable from the cycle of agricultural activities, artisan industries with varying degrees of complexity emerged, centred on the processes of milling, distilling and fermentation. While these generally remained extensions of farming activities, urban demand led to up-scaling, particularly in milling and baking, allowing for the specialization of these processing activities.

At the same time, the separation and transformation of primary products opened up new possibilities in the area of cooking, which created new derivative foods through the combination of products of primary food transformation. Cakes, pastries, toffees and liqueurs established a new range of food options leading to sophistication in kitchen activities, combining the raw materials of primary processing.

Pre-industrial societies, therefore, whose survival depended on the development of food preservation technologies, were already adapted both to processed foods and the more sophisticated products of cuisine. The crucial challenge for the development of the food industry in the nineteenth century was not that of radically breaking previous 'natural' food habits, but establishing already existing technologies on an industrial footing, applying industrial techniques, based on new and increasingly scientific knowledge, to the age-old activities of food preservation and processing, and extending these techniques to products previously beyond the reach of preservative processing and transformation.<sup>3</sup>

### **The rise of the modern food industry<sup>4</sup>**

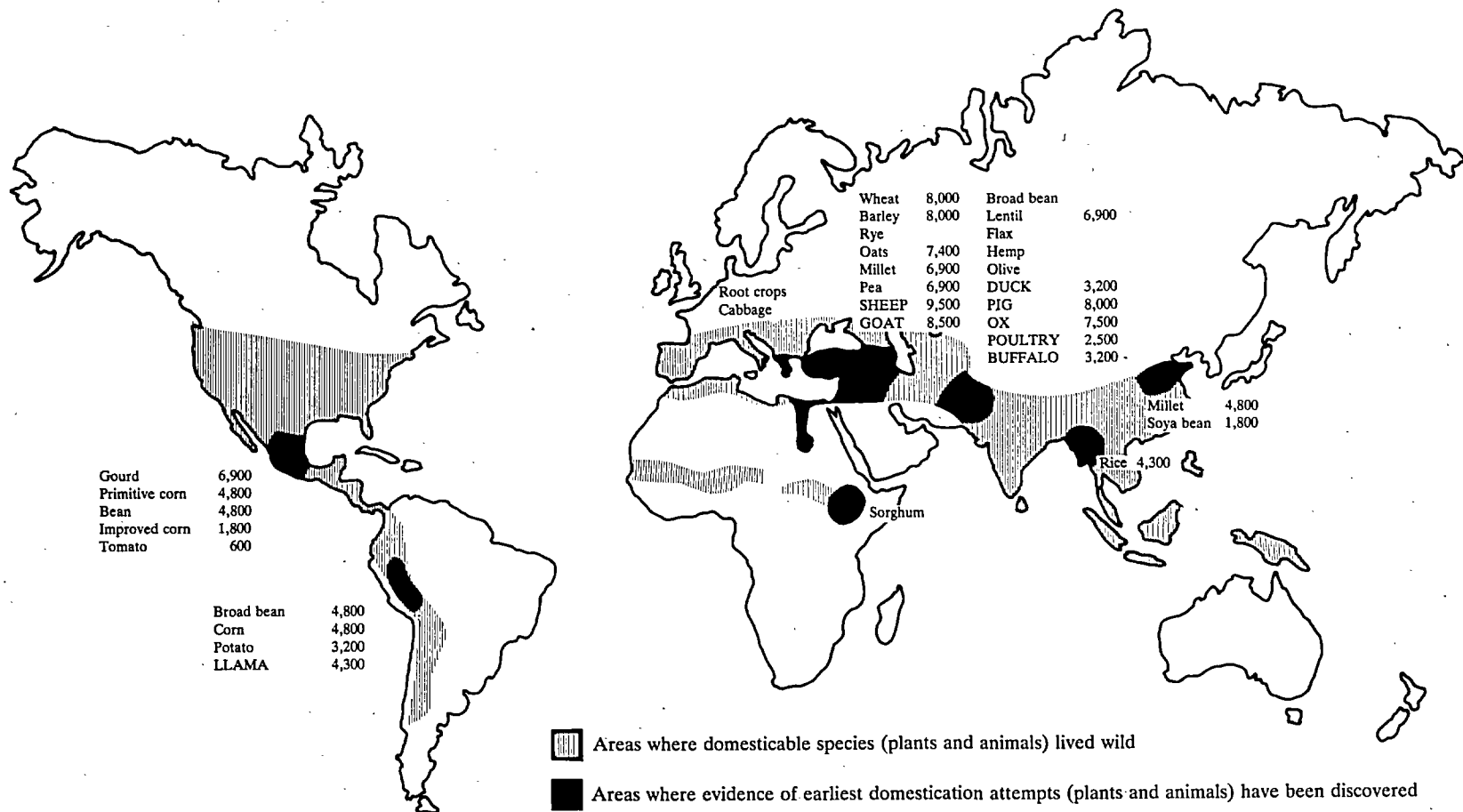
Stimulus to the creation of the modern food industry was provided by the rapid pace of urbanization during the nineteenth century which not only transformed demand for existing processed products but created vast urban

markets for products previously consumed *in natura*, but now less accessible in the urban context—fruit, vegetables, meat and milk. At the same time, given the spatial dimensions of agricultural production, supply was increasingly pushed out to the frontiers distant from urban markets, posing new problems for food preservation.

Three tendencies can be discerned in this early consolidation of the food industry: first, the up-scaling of pre-existing artisan activities, by using the resources of the Industrial Revolution's energy base and the advances in mechanical engineering which was the crucial element in milling, brewing and cheese-making. Second, specifically mass industrial solutions to preservation problems which applied to a whole range of products. This was particularly the case for canning which was based on mass tin-plate production, the increasing incorporation of the scientific principles of bacteriology, and was equally applicable to the preservation of meat, milk, fruits and vegetables. Refrigeration, although initially limited to meat products would also fit this category. Third, technological breakthroughs relating to specific products, permitting new forms of preservation on an industrial scale. Milk was the most important produced here. Previously limited to transformation into cheese or yoghurt, new technologies permitted the industrial production of powdered or condensed milk.

While the range of solutions permitted a variety of distinct industrial branches, and while specific processes increasingly depended on the incorporation of scientific advances, the industrialization of food production in the late nineteenth century depended largely on the sophistication and up-scaling of the age-old principles of artisan food processing based on the separating out of those physical properties responsible for food deterioration. Now, however, the laws of physics replaced experimental knowledge and combined with the advances in mechanical engineering and the new energy bases of the Industrial Revolution to establish industrial giants in the major branches of the food industry. Where the restructuring of the world market met with no resistance, artisan production was rapidly eliminated or marginalized on the basis of increasing luxury





The major areas of plant and animal domestication. This map (1977) summarizes the available knowledge on the origins of agriculture. The Middle Eastern area is the oldest and has probably played a leading role in the spread of agriculture, with the exception of Central America, where the dates show that agriculture developed independently from the Middle East. Direction des Antiquités de la Région Ile-de-France.

markets. As a result, the United States, Great Britain, Denmark, and the Netherlands were to be the homes of the major food companies.

In other countries, such as France and Germany, a combination of protectionism and significant peasant farming slowed down tendencies to industrial concentration. In addition the transport revolution of the nineteenth century gave a new lease of life to natural products, particularly where the industrial alternative—as in the case of canned fruit and vegetables—resulted in a marked decline in quality. It is no accident that the canning industry flourished where traditions of peasant farming were weakest, as in the United States. While lack of a peasant farming tradition facilitated the development of certain industrial food branches, family farming accompanied the growth of the industrial food industry both in Europe and the newly occupied frontiers. This farming, however, was now stripped of its ancillary processing activities and integrated either through co-operatives, in the case of more perishable products, or through modern distribution systems, into the different branches of the food industry.

To exemplify the major trends in this first phase of industrialization we will now consider the individual cases of the milling, canning, refrigeration and milk processing industries.

### **Milling-baking**

In the pre-industrial period milling and baking were already constituted as specialized artisan activities serving local markets. However, the flour-based activities of those countries that became integrated into the world grain market were to be rapidly transformed, giving way to an uneasy triple alliance of giant traders (Cargill, Continental and Bunge), centralized mill operators (the Minneapolis Milling Association being the strongest) and fully industrialized bakeries, such as the British firm, Rank.<sup>5</sup>

While the age-old crushing technique remained at the heart of the industrial process, the substitution of stone with roller milling and the incorporation of air-based separation techniques established new levels of quality leading to the collapse of artisan milling operations. In addition, the consolidation of a centralized world grain market permitted the blending of

different grain varieties guaranteeing product uniformity and enhanced baking efficiency. These characteristics were decisive for the transformation of home-based and artisan baking into mass production industrial operations.

The division between the milling and bakery industries, with the former directly transforming rural production into intermediary products for the final consumption of bake-houses and biscuit-makers established itself as a paradigm within the food industry. While the intermediate industry was directly based on the rural product, the latter represented a simple ingredient for the final food consumption industries. This distancing from the rural product opened up the possibility of using alternative ingredients, a tendency which was to be increasingly exploited once advances in the chemicals industry demonstrated the interchangeability of different ingredients. By the same token the same ingredients could be used for the confection of different final products. At the same time this division within the food industry reflected the industrialization of a distinct phase in the pre-industrial food system, with the intermediate industry eliminating on-farm and artisanal processing, and final foods production expropriating the more sophisticated products of the kitchen.

### **The canning industries and meat refrigeration**

Canning applied the age-old principles of cooking to the problems of preservation in conditions of mass production, and was an intrinsically industrial solution in that it depended on tin-plate production and large-scale factory organization. Initially experimented with in Napoleonic times to improve the efficiency and quality of army food supplies, it was only subjected to scientific bacteriological controls towards the end of the nineteenth century.

While refrigeration was more specifically linked to meat production in the nineteenth century, canning represented a generalized solution to the range of highly perishable products which needed to be integrated into urban consumption patterns. Nevertheless the evolution of this sector depended on the specific processes of industrialization affecting each group of products.



Corn cobs: the smallest dates from 5000 B.C. and the largest, obtained through seed selection and completely modern in every respect, dates from the beginning of the present era.

In the cases of meat and milk, where for different reasons strong oligopolies were quickly established, these firms also dominated their respective canning processes. By contrast, fruit and vegetable canning favoured location at rural production sites leading to a proliferation of canneries which increased from 97 to 1,813 in the last thirty years of the nineteenth century in the United States. Oligopolies were soon to become consolidated however and the future giants of the industry, Del Monte and Heinz, were already expanding their operations. Similar technologies and industrial processes applied to a range of fruits and vegetables, and therefore the limits to expansion were not defined by individual product markets. At the same time perishable products demanded a close relation between rural production and industrial processing, leading to the initial identification of many firms with specific products. Industrial expansion, therefore, on the

basis of these more specialized agricultural products, each with a restricted individual market, demanded at the same time control and diversification of agricultural supplies. Unlike the grain market, merchant capital played a subordinate role in the consolidation of the fruit and vegetable canning industry, with the principal firms combining contract purchases at farm gate with direct ownership of tropical and semi-tropical plantations. Given the simplicity of the processing techniques, the agricultural raw material remained the principal industrial cost, leading to a direct involvement in the organization of agricultural production.

Canning was a form of industrial preservation through transformation which created a distinctly inferior product—canned meat, particularly becoming limited to low-income consumption patterns. But this would certainly not have been the case had not refrigeration transformed the conditions for the industrialization



An early cold store. Malmberg/Rapho.

of 'fresh' or raw meat. Meat packing was already organized industrially prior to refrigeration, particularly in the United States, made possible by a combination of vast prairies, rapidly expanding urban markets and an efficient railway transport network. However, industrial expansion and concentration were limited by the perishability of the product, which restricted sales to local or regional markets and specifically excluded meat from the booming world food trade. Contrary to canning, product preservation was guaranteed not by the industrial process itself but by the application of refrigeration to storage and distribution. Industrial expansion therefore depended on control over upstream and downstream distribution networks. The result was a rapid oligopolization of the industry, advancing from distribution to production by the 'big five'

who came to dominate the new refrigeration technology.<sup>6</sup> Conditions for production were transformed as national and world markets replaced local and regional outlets, and the Chicago meat packing plants pioneered assembly line production techniques which were to serve as the model for future Fordism.

By the end of the nineteenth century refrigerated shipments had fully integrated fresh meat into the world food market and, together with the earlier consolidation of the grain trade, was responsible for a profound restructuring of world agriculture, displacing the production of these two basic constituents of European consumption to the new frontiers of the United States, Canada, Argentina, Australia and New Zealand.

In contrast to canning, refrigeration represented a technology which allowed for the

industrialization and preservation of food products without transforming their natural characteristics. Qualitatively new conditions, therefore, were created for the industrialization of fresh foods, laying the basis for the development of the frozen foods industry, and the integration of fresh foodstuffs into world trade.

### **Milk products**

Improvements on artisan preservation techniques, such as the centrifugal cream separator for butter, allowed for the industrialization of dairy products. The simplicity of these improvements however, combined with the perishability of the raw material input, prevented much industrial concentration from taking place, and the co-operative became the dominant organizational model, particularly in Europe. Co-operative-based industrialized dairy production became one of the principal avenues to the restructuring of European agriculture, now ousted from its own meat and grain markets. By the turn of the century refrigeration was to bring a severe challenge from Australian and New Zealand products, but European dairy production, now that it was on an industrial footing, was in a stronger position to resist overseas competition.

Similarly uncomplicated cooling and then sterilization techniques, again developed largely on a co-operative or even individual farm basis, allowed for the incorporation of liquid milk, by means of the milk train, into urban consumption.

However, between traditional preservation technologies which transformed the product completely (butter, cheese) and the rapid perishability of cooled or sterilized milk, particularly in pre-freezer days, a vast market existed for new preservation techniques which remained closer to the original product, the basic liquid complement to grain and meat in the human diet. Two such novel and patentable techniques were developed in the 1860s rapidly giving rise to the two giants—the Anglo-Swiss Condensed Milk Co. in the United States, and Nestlé, based on powdered milk, in Europe. Rapidly outstripping their respective continental markets, each manufactured the rival's product before a merger created what is now

the world's second largest food firm, Nestlé.

### **The food industry on a new footing**

Within the pre-industrial food system, transformation had been the key to preservation, creating new products like cheese, smoked-meat or beer, whose names reflected their degree of independence achieved, from the point of view of consumption. Sophistication of transformation techniques had led also to a variety of alternatives for each agricultural product. Nevertheless all of these products were firmly based on the principle of preserving the original agricultural product. With the new technologies permitting industrialization, however, the preservation/transformation equation was to be profoundly redefined. On the one hand new technologies such as refrigeration made industrial organization and distribution possible on the basis of increasing fidelity to the original agricultural product—in this case meat—developing systems of preservation without permanent transformation. On the other hand in the processing industries the agricultural product became increasingly subordinated to the final product, being reduced as a result to the status of an input. This could already be seen in the case of the milling industry where types of grain were promoted not for their intrinsic nutritional qualities, which were in any case not well understood at the time, but for their capacity to produce more loaves per pound of flour and stay fresh longer. Agricultural production therefore was now reorganized in line with the demands of the industrial process and the quality requirements of its final product.

The full significance of this development was to emerge when the food industry took as its starting-point not the transformation/preservation of the agricultural product, but cheaper alternatives to existing industrialized foods. Margarine production, or 'butterine' as it was originally called, although developed at the same time as the other food branches analysed above, put the food industry on a qualitatively new footing and, not accidentally, gave rise to today's largest single food firm—Unilever.

Although successfully industrialized, butter was too expensive to enter mass urban

consumption. Heavily dependent on one input—milk—it now suffered competition from technologies which opened up new markets for fresh, condensed and powdered milk. At the same time rising working-class living standards provided a potential mass urban market for cheap butter. The solution lay in the development of an imitation product using alternative raw materials. Success depended on the ability to blend different inputs. This in its turn was responsible for a major shift in the food industry, which came now to depend increasingly on the chemicals industry. Unilever itself represented the fusion of a food with a non-food company—producing margarine and soap respectively—using the same inputs and technological processes. The key to the success of margarine was its ability to imitate and therefore substitute for an existing product, using cheaper inputs. This competitive advantage was threatened to the extent that alternative inputs increased in price—as in the case of animal fats, largely as a result of demand from the margarine industry itself. The industry was therefore directed to the constant diversification of its inputs, experimenting with a wide range of vegetable oils. Initially supply bases were guaranteed by the organization of tropical plantations, but the key to margarine's success as cheap mass-produced substitute lay in technological advances in chemical engineering which increasingly permitted the interchangeability of a variety of oil-based inputs for the confection of the same final product.

Product innovation therefore brought with it new levels of technological innovation in close dependence on the principles of chemical engineering. A new era was to begin for the industrialization of foodstuffs, in which integration with the chemicals industry, while initially permitting greater interchangeability within the range of food inputs, would increasingly break down the distinction between food and non-food inputs, opening the way for the incorporation of chemical components in final food production.

### **Principal tendencies in the twentieth century**

The first years of the twentieth century saw a

rapid concentration of the major food branches as small firms and artisan activities gave way to the major oligopolies which, once consolidated, had their market growth sustained by continuing urbanization. A parallel process of concentration occurred in retail distribution, beginning as early as the 1920s in the United States. While specific firms such as Unilever entered retailing to guarantee markets for low-profile or new products, retailing companies emerged to match the growth of the major processing firms. The modernization of distribution channels, as we will see, was the pre-condition for the expansion of the food industry.

If the nineteenth century was characterized by the industrialization of artisan food processing, the twentieth extended this industrialization to the basic activities of cooking. This was made possible by profound socio-economic changes leading to a demand for time-saving in food preparation particularly provoked by the incorporation of women into the urban labour force. The first moves in this direction occurred early in the century in the United States with the development of breakfast cereals facilitated by the industrialization of fresh milk distribution. These new quick-to-serve products revolutionized breakfast habits, giving rise to product-specific industries—Kellogg's, Quaker—which were among the first to transform themselves into multinationals, providing at the same time new markets for grain surpluses.

Although war conditions led to government promotion of specific new products—ersatz substitutes in Germany, easier and quicker-to-use packet soups, and instant coffee in the United States, it was the post-war boom which led to new industrial incursions into home cooking. Refrigeration, as noted earlier, had the advantage over canning in that it more closely reproduced the natural food's original qualities. Its generalization, however, demanded a much more sophisticated retail infrastructure involving supermarkets with cold storage and display facilities and homes with fridges. Frozen meat, fish and vegetables combined original taste with ready-to-cook advantages, and together with second generation equivalents—fish fingers, hamburgers, processed potatoes and chips—offered a complete meal just for the heating. Fish products which had previously



Transport of salt coming from the crater lake El-Sod, Sidamo Province, Ethiopia. G. Gerster/Rapho.

been limited to inferior tinned varieties—sardines and tuna in particular—were major beneficiaries of the frozen food industry, attested by the rapid growth of new companies such as Findus. Similarly, dairy products, particularly yoghurts and ice-creams also experienced rapid growth with the latter's market no longer defined by the parameters of food consumption but rather by that of pleasure, achieving as a result new elasticities of demand.

The third and contemporary incursion into cooking has been directed primarily at the institutional forms of cooking, whether of army, school and hospital meal services or of restaurants, and it has been represented by the rise of the fast-food industry. From the relatively simple industrialization of sandwich production in the form of hot-dog and hamburger bars, the consolidation of an increasingly specialized intermediate food sector, combined with the application of computerized cooking procedures incorporating micro-wave technology, has enabled industrial organization to

extend to institutional meal services and even to restaurants, particularly evident in the proliferation of 'pizza' chains.

Beginning in the 1950s a rapid internationalization of the food industry accompanied the opening of these vast new markets. With greater or lesser resistance, leading American and United Kingdom firms (with respectively 40 and 22 of the top 100 food companies) came to dominate the European food industry. In addition to the new markets created by structural socio-economic transformations, product innovation stimulated market growth in the favourable conditions of the sustained post-war boom. Such innovations, primarily affecting details of final processing—new flavours, colours and aromas—led to the systematic use of additives and a closer integration with the products of the chemical and pharmaceuticals industry.

By the middle of the 1960s, however, market inelasticities for basic products tended to bring stagnation to the food industry. Two

strategies were developed to counter this saturation of markets in the industrialized countries. A new wave of internationalization was promoted, primarily directed at the newly industrializing countries but also penetrating the markets of poorer Third World countries. This led to a restructuring of Third World agriculture and food consumption patterns in subordination to technologies developed according to food habits and standards of living prevailing in the industrialized countries. Although geared to mass production in these latter countries, the products of agro-industry are only accessible to a minority in the context of Third World economies. Nevertheless mass marketing strategies, particularly but not exclusively of 'non-food' foods—ice-cream, coca cola, chewing gum, sweets, etc.—especially appealing to the young, create serious nutritional problems as basic food items are sacrificed to these non-essentials. Similarly traditional Third World foodstuffs are ousted in favour of more profitable crops leading to scarcity and price increases in the traditional foodstuffs sector, generating widespread undernourishment.

In the industrialized countries the food industry responded to the crisis by diversifying into specialized and increasingly sophisticated products. Made-up baby foods provided a ready market, as it facilitated shorter breast feeding dependence. Various lines of food dressing—from tomato ketchup, to the more sophisticated sauces and spices—completed the process of industrializing cooking activities. While these two areas responded to markets created by the structural reorganization of working and eating habits, a third area to be exploited was that of products on the borderline between food and pleasure, where demand elasticities were highest, particularly in the context of rising real incomes. At the same time the food industry was able to exploit a growing reaction to the very food habits it promoted. Consequently one of the currently fastest growing sectors of the food industry has been that devoted to dietary products, virtually reproducing a whole line of substitutes for existing food industry products. In addition, a whole range of natural products has now been developed to cater for opposition to the industry's dominant practice of incorporating chemical

additives. And finally with the saturation of human food markets, balanced animal pet foods now occupy a privileged place on supermarket shelves—the kitchen scraps of pre-industrialized cooking days being already appropriated by the food industry. This development had already been prepared by the growing importance of balanced feed for livestock farming, as a result of which knowledge and application of nutritional principles have advanced more rapidly in the case of animals than humans.

## **From food industry to bio-industry**

This shift of the industry's growth sectors away from basic mass foods to new reconstituted products directed at specific target groups was only possible as a result of profound changes in the technological base of the industry. Frozen foods, as we have seen, derived essentially from technological advances in the art of preservation without transformation. Product innovation on the other hand tended primarily to introduce modifications in the preservation of the products through the incorporation of additives rather than basic transformation.

The ability to go beyond additive-based product innovation to the creation of new product markets, growing precisely out of a heightened awareness of food's nutritional content, depended on the supply of an increasingly sophisticated range of intermediates produced by primary processing. Such intermediates now became available as a result of cost pressures within the bulk-volume low-margin primary processing sector, leading to product diversity, elimination of waste, and the automation of industrial processes. From being the producers of basic ingredients—flour, milk, sugar—primary processing operations, whether organized as a separate industrial sector such as milling or a verticalized products industry like Nestlé, now specialized in the *fractioning* of these ingredients into their constituent nutrients, carbohydrates, fats and proteins.

Sectors of the food industry had from their beginnings been based on the application of chemical engineering to food processing (as in the case of Unilever described above). With the introduction of additives, the chemicals in-



dustry itself became a constituent component of the industrial food system as a supplier of intermediates. Now however, while the move to fractioning in primary processing and reconstituted or fabricated final products involved a greater absorption of technologies deriving from the chemicals industry, the major breakthroughs resulted from the industrial application of advances in microbiology and biochemistry. At the same time the rising energy costs of the petroleum-based chemicals industry led to increasing interest in renewable biomass sources, and to parallel involvement in biochemical and microbiological technology. While the leading food industries have absorbed these new technologies and even expanded into the chemicals industry, it is the latter which seems to be all set to take over important sectors of the food industry. As a consequence a new bio-industry is in process of formation in which non-food inputs can be transformed into food, and traditional food inputs into the typical products of the chemicals industry.

While the sophistication of food technologies makes the distinction between physical, chemical and biological factors increasingly difficult to distinguish, the key to the formation of this new bio-industry is the capacity for industrial control over the catalytic activity of micro-organisms, particularly bacteria and enzymes; and the increasing capacity to reprogramme these latter for specific products through genetic engineering.

The full impact of these new developments has yet to make itself felt but the main directions can already be indicated, although their rhythm depends on a combination of relative raw material prices, legislation, and consumer acceptance.

In the first instance raw materials become increasingly interchangeable and the agro-food chain based on specific products and their derivations is broken. For the production of sugars, starches or proteins, the new technologies break down the barriers which had separated grain from sugar, and soya from meat and milk. Valued now for their basic nutrients, agricultural products become reduced to biomass measured for their relative protein/starch/fat content. As a result, previous by-products such as straw become potential new inputs. Agriculture as such becomes inter-

changeable with other sources of biomass—sea farming—and other sources of organic inputs—urban waste. At the same time, while agricultural activities will become increasingly generic rather than product-specific, new levels of control directed now at protein, starch, sugar or fat content are likely, with the seed industry controlled by chemical and petrochemical firms which are also interested in new biomass sources, and are now increasingly capable of redesigning seeds for their specific purposes.

While this general tendency would point to a shift from the geo- to the biosphere for inputs, these same technologies open up reverse downstream linkages with the possibilities of producing protein from sources such as petroleum and natural gas. As a consequence, single-cell protein from these sources, although currently made marginal by adverse relative costs and restrictive legislation, represents a permanent challenge to agricultural protein supplies. While European production therefore has not advanced significantly the Soviet Union would appear to be adopting a strategy of animal food self-sufficiency through the development of single-cell protein primarily from natural gas.

The transformation of primary processing into a specialized intermediates supply industry has been based on the development of a distinct branch of the food industry for the production of industrial enzymes. The increasing sophistication of these enzymes threatens both traditional agriculture/industry relations and those established more recently between the food and chemicals industry. Enzyme technology, producing high fructose sweeteners from corn has virtually condemned sugar as the primary sweetener for the food industry. At the same time advances in enzyme technology can provide a potential alternative to chemical additives in their capacity to stimulate biological reactions designed to produce the required taste and colouring lost in the initial processes of fractioning.

Control over enzymes and microbial reactions has laid the basis for the automation of the food industry, potentially transforming an industry still largely based on up-scaled artisan techniques into one dominated by continuous-flow processes. Such qualitative transformations in the technological base of the food industry point to rapid processes of concen-

tration, increasing the barriers to entry and opening the way for a greater integration of the food industry as a branch of a polyvalent chemicals industry.

Food preservation through transformation advanced via the industrial up-scaling of artisan processing techniques. Primary processing became separated from final food production with the former providing basic ingredients. Chemical intermediates were increasingly incorporated to redress the effects of primary processing in terms of taste, colour, increased preservation, and to provide the basis for product innovation strategies. With the industrial domination of enzymatic and microbial processes and the increasing capacity to engineer biological catalysis, basic nutrients came to provide the inputs for reconstituted or fabricated foods. Along this route agricultural products could now be replaced with a vast range of organic and even inorganic raw material options. At the same time, industrial processes were automated and integration with the chemical industry created the basis for a new unified bio-industry.

While these tendencies are only beginning to be consolidated, they appear to indicate the principal future directions of food technologies. Nevertheless, preservation without permanent transformation has provided an alternative route for the food industry, of which frozen foods have been the major expression. Important new preservation techniques, particularly lyophilization, which combines high fidelity to the original product without the high costs of freezing techniques, are likely to continue to offer an alternative to fabricated foods, particularly in the context of the application of genetic engineering and biotechnologies to improve, control and programme agricultural products.

### **Food technology and the periphery**

Incorporation of the periphery was a pre-condition and a stimulus to the industrialization of the food industry. Subsequent expansion led to the agro-industrialization of the Third World and to a marked disruption of food production and consumption patterns. Present tendencies, however, point to a greater self-sufficiency of the industrialized countries as agricultural animal foods and sweeteners are replaced by the products of bio-industry.

While increasing self-sufficiency in the industrialized countries threatens Third World export markets, the internationalization of new food technologies has a profound impact on internal consumption and production patterns in the Third World. At the industrial level the multinational food companies have established new technologies and marketing standards reducing the traditional food-producing sector to marginal status. The consequences have been particularly dramatic at the level of consumption. In this context the multinationals have brought with them food habits generated in very different socio-economic conditions. As we saw earlier the dynamic products of the food industry have been developed in a context where basic food needs have been increasingly saturated. As a result, these products have sacrificed nutritional content to the attractiveness of taste, and pleasure has replaced nourishment as the criterion for consumption. Transposed to a context where mass hunger and malnutrition are still the norm and backed by the weight of modern advertising, these superfluous 'food' products come to compete with basic foodstuffs thereby, bringing nourishment levels down in the Third World.

This imposition of alien food patterns may assume catastrophic proportions, as it has in the use of powdered milk as a substitute for breastfeeding. Introduced into communities with neither the necessary financial resources nor appropriate hygiene conditions the conversion to powdered milk feeds has resulted in a pattern of camouflaged infanticide. The power of multinational marketing is shown here in its most extreme form, able as it has been to lead mothers to desist from using a free and superior source of nourishment in economic conditions where the need to substitute breastfeeding does not exist.

To the extent that these new food technologies therefore are identified with specific socio-economic conditions prevailing in the industrialized countries, policies are needed to control their incorporation into Third World countries. Such technologies must be selected and rescaled according to the nutritional requirements of Third World countries. At the same time these new food technologies cannot be rejected out of hand since they represent important advances in hygiene for the con-

sumer, particularly in the case of the preservation and distribution technologies, which are decisive in view of the increasingly urban character of most Third World countries.

At the level of trade, on the other hand, Third World countries are faced with the increasingly marginal importance of traditional raw-material production, through industrial substitutes and the increasing interchangeability of agricultural products, which is restoring the competitiveness of agriculture in

temperate climates. At the same time the concentration of biotechnological research in the industrialized countries creates the danger of new patterns of technological control. Third World countries therefore cannot afford to ignore the challenges presented by the new biotechnologies which are redefining the world structure of the food industry, and firm policies will be required to counter the twin threats of being increasingly marginal and dependent.

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## Notes

1. For a fuller discussion of the issues raised in this article we refer readers to D. Goodman, B. Sorj and J. Wilkinson (forthcoming).

2. P. R. Mooney, *Seeds of the Earth*, Canada, 1979, and 'The Law of the Seed', *Development Dialogue*, 1983, provides the most detailed and accessible account of

the evolution of the world's gene resources.

3. For detailed descriptions of pre-industrial food systems see Tannahill (1975).

4. For an account of the development of food technology up until the twentieth century, cf.

Derry and Williams (1970). For the most complete account of the food industry and technology in the twentieth century, we refer readers to the 1980 OECD Report.

5. Dan Morgan, *Merchants of Grain*, Viking Press, 1979.

6. Swift, Armour, Morris, Wilson and Cudahy.

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## References

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- BURBACH, R.; FLYNN, P. 1980. *Agribusiness in the Americas*. Monthly Review Press.
- DERRY, T. K.; WILLIAMS, T. I. 1970. *A Short History of Technology*. Oxford.
- FIELDHOUSE, D. K. 1978. *Unilever Overseas: the Anatomy of a Multinational*. Croom Helm.
- GHERSI, G. et al. 1980. *Les cent premiers groupes mondiaux de l'industrie agro-alimentaire*. Montpellier, IAM.
- GOODMAN, D.; SORJ, B.; WILKINSON, J. *From Farming to Biotechnology*. Blackwell (in press).
- MORGAN, D. 1979. *The Merchants of Grain*. Viking Press.
- MOONEY, P. R. 1979. *Seeds of the Earth*. Canada.
- . 1983. *The Law of the Seed*. Uppsala.
- OECD. 1979. *Impact of Multinational Enterprises on National Scientific and Technical Capacities: The Food Industry*. Paris.
- RASTOIN, J. L. 1975. *Structure et croissance des firmes agro-alimentaires multinationales*. Montpellier, IAM.
- TANNAHILL, R. 1975. *Food in History*. Paladin.
- UNITED NATIONS. 1981. *Transnational Corporations in Food and Beverage Processing*.
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# The transnational food companies and their global strategies

Marion Leopold

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The history of food as a stake in conflicts is as old as humanity itself. The reason for this is simple: in order to survive, mankind must eat. This means that control over the production and distribution of food constitutes a unique and fundamental source of economic power.

In the West, following the development of capitalism, the majority of the population are able to live without being conscious of the power of food, mainly because its relationship therewith has become an indirect one. This process, which already existed in embryonic form under the feudal system, particularly when land tenure became monetarized, is linked to the commercialization of the relations of production and to the growth of forces of production. From being an immediate and privileged object of relations of extortion, food was transformed into a mere consumer product, whose production and distribution processes and, consequently, the control thereof, became obscure mechanisms and all things considered, devoid of any specific interest.

Nevertheless, at the present time, the issue of the control over food is more than ever a topical one, as for the first time we are witnessing the establishment of a veritable worldwide agribusiness system, that is to say, the constantly increasing integration of the geographical and economic space within which

the power of food is exercised, and the centralization of this power. This system, which is in the process of being constituted, is not unrelated to apparently autonomous phenomena, such as the famines that strike certain regions of Africa. More generally, the development of a worldwide agribusiness system is in the process of bringing about deep-seated and lasting changes in the conditions governing the production and consumption of food, on a global scale.

The emergence of this system is itself closely linked to the recent developments in agribusiness, which is defined as follows (Goldberg, 1983, p. ix):

All of the interrelated private and public policy-making enterprises, from farm supply, farming, and processing through distribution to the ultimate consumer—including all the private and public co-ordinating mechanisms that hold the commodity systems together and enable them to adjust to technological, political, social, and economic change.

Since the Second World War, capitalist agribusiness has increasingly taken on the appearance of an international complex, highly integrated and dominated by a restricted number of industrialized countries.

It must be said that the formation of a worldwide agribusiness system based on the internationalization of capitalist agribusiness is

itself only one dimension of a much more extensive process, the globalization of the capitalist economy, that is, the enlargement of the area in which capital is revalorized. The integration of agribusiness and its various components deserves to be studied from this overall viewpoint, failing which certain phenomena with which it is associated (unbalanced agricultural production, malnutrition, undernourishment, hunger, etc.) readily take on the appearance of a vast and diabolical strategy.

Yet, if a strategy exists, it is not at the level of the effects that it must be sought. The development world agribusiness is undergoing at present is neither more nor less than a specific response on the part of capitalist agribusiness to a general problem, which is structurally inherent in capitalism, that is to say the downward trend of the rate of profit. Since the postwar years, agribusiness, like other sectors of the capitalist economy, has been seeking to combat this downward trend and therefore to maintain and increase its profit margins, by internationalizing and integrating its various structures and activities.

An overall analysis of the present-day agribusiness system, particularly when it is considered in the context of the logic behind capitalist accumulation, goes beyond the limits of the present study, which is confined to examining one of the components of this vast complex, the food-processing industry (manufactured foods).

There are two reasons for this choice. On the one hand, this industry occupies a strategic position in the development of the food system, inasmuch as it aims to integrate the activities that come before and in particular after food manufacturing. On the other hand, it is the only element in agribusiness immediately subjected to the logic of internationalization in capitalist production. This does not apply, for instance, to the major commercial oligopolies dealing in coffee, tea, sugar, etc., nor to the private and public networks engaged in the development of international markets for the so-called strategic food products (cereals, etc.), even though these markets may serve to launch production subsidiaries.

With respect to the internationalization of the food-processing industry (henceforth called the food industry), two observations come to

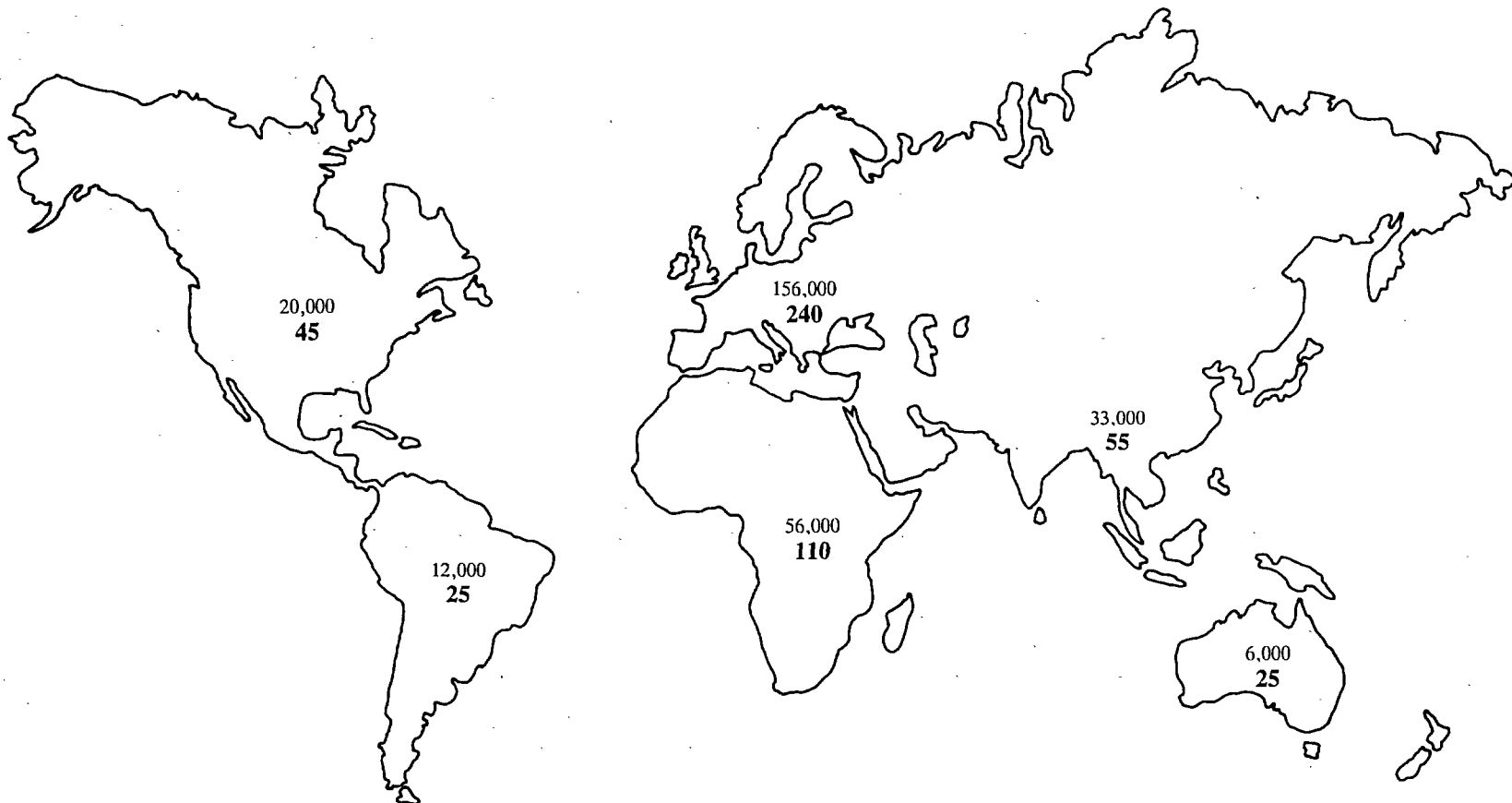
mind forthwith. Firstly, the very size of the phenomenon and, secondly, the special position occupied by production abroad. Thus, in 1981, no less than 51 of the 500 largest multinationals in the world (seventeen industrial sectors) were precisely food companies,<sup>1</sup> and 36.3 per cent of the world sales of these fifty-one concerns were due the output of foreign subsidiaries—as against an average of 33.2 per cent for the 500 concerns, and of 28.5 per cent not counting the oil groups (Stopford and Dunning, 1983).

This pronounced multinationalization appears somewhat unusual at first sight, particularly if we take into account the fact that food production is characterized by relatively less intensive technological inputs and as such may readily be carried out by a national sector. Furthermore, the food industry, one of the oldest in the world, in fact exists, in one form or another, in every country in the world. In the case of the developing countries, the role of this industry is a most important one, as it represents on average almost a quarter of the national product in terms of manufactured goods, and approximately one-sixth of industrial employment and of value added (United Nations, 1981).

It is therefore not a matter of finding out whether each national economy can take care of the production of manufactured foods; the question is rather why the multinational companies are so active in a sector in which national industries happen to be sizeable.

In order to give a partial reply to this question, it should be pointed out first of all that, despite appearances, there are considerable barriers preventing access to the food industry; however, as will be seen below, these are not technological barriers and they do not apply to all types of food. In other words, the multinational firms, without excluding national industries, can develop and have developed oligopolistic food markets which are in effect inaccessible to the indigenous sector.

However, over and above this consideration, it must be noted that the multinationalization of the food industry is not primarily determined by the competition between national and multinational groups. It is above all, as we have already said, a response to the problem of revalorizing the capital. A food concern, like



Approximately 280,000 employees and 500 firms in more than 70 countries

The global scope of the activities of a giant food transnational: Unilever spreading over the five continents, 1983. Unilever NV and Unilever PLC.

any concern moreover, is required to use the means available to it in order to maximize the return on its capital; the internationalization of the markets and the delocalization of production are among these means, in the same way as concentration/centralization, diversification, etc.

In order to grasp the overall dynamics of the food industry and, consequently, its role in the world food economy which is in the process of being established, it is thus important to take as the starting-point this logic of accumulation as it emerges at different levels. The concrete form of these manifestations is itself determined, on each occasion, by the specific characteristics of this industrial sector, which is why it is essential to identify them beforehand.

### Characteristics of the food industry

The peculiarity of this industry is that it satisfies

a basic and constantly recurring need: the need for food. As such, it is a typical industry dealing in mass-produced consumer goods:

The sector is considerably market-oriented (food represents the largest item of current expenditure on consumer goods).

Demand is relatively stable and to a large extent inelastic.

The profit margins are on average low.

The average growth of income and profits is slow but constant.

Cash flows are large.

These characteristics of the food industry are basically determined by the low elasticity of demand. Engels' law thus establishes a negative correlation between the level of food consumption and that of income: increased income leads to a reduction in the portion set aside for expenditure on food. This law may be verified both on an international scale and with respect to the individual country.

Figure 1 shows that the portion of income spent on food is considerably lower in the most

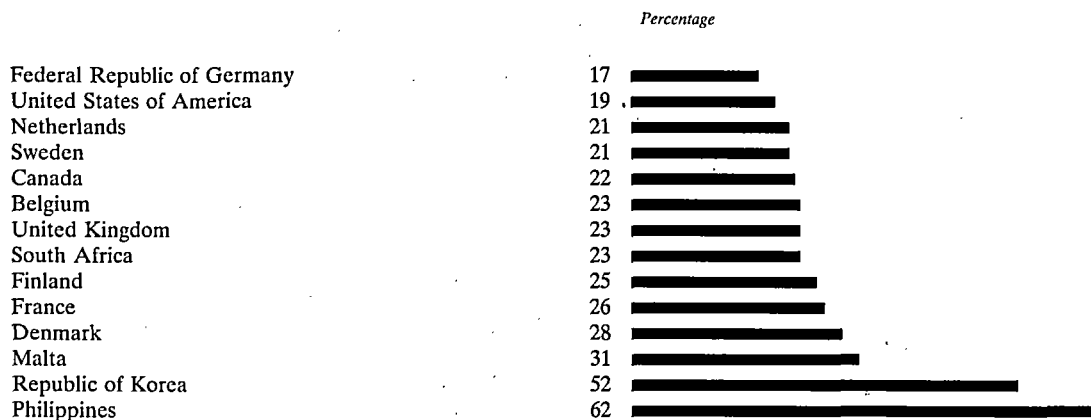
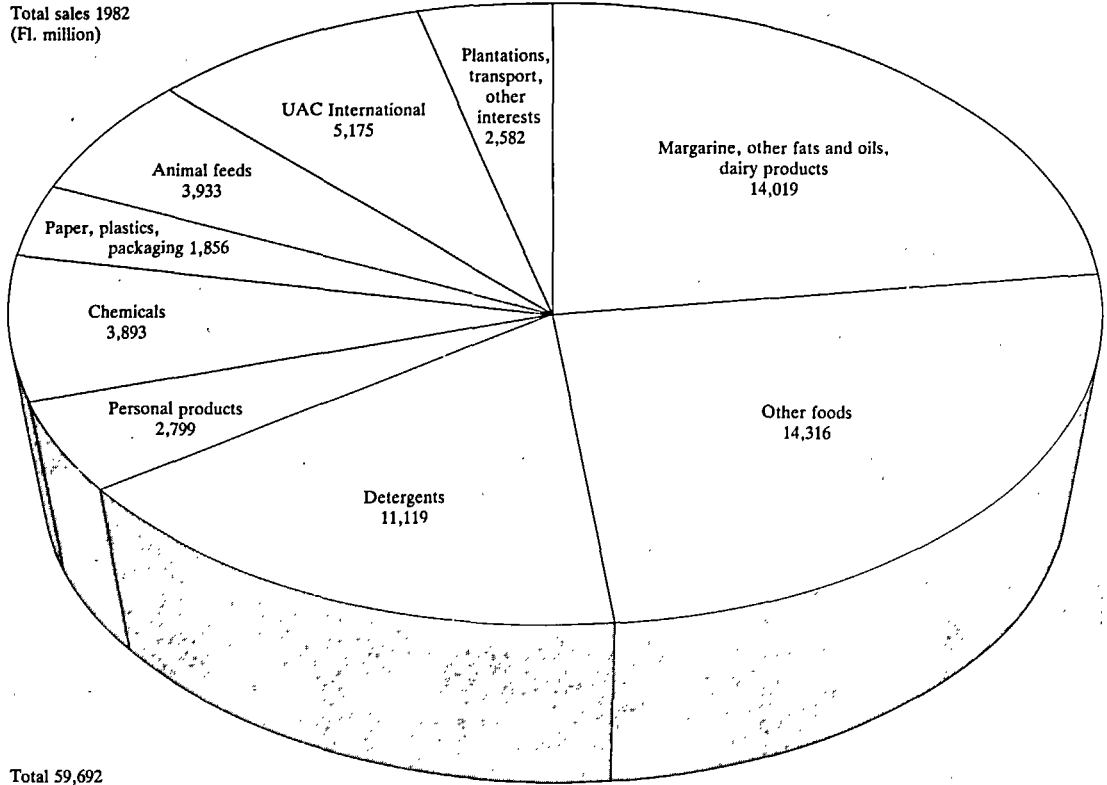


FIG. 1. Proportion of net income spent on food (1975-77).

(After: United Nations National Accounts of Statistics and National Sources (USDA Chart), in Arthur, 1982.)





The diversity of Unilever's activities. Unilever Report and Accounts, 1982.

industrialized countries (more than three times as much in the Philippines than in the Federal Republic of Germany or the United States). The following table shows that this pattern emerges with respect to the individual countries.

TABLE 1. Percentage of gross income spent on food per consumer unit, United States, 1980-81<sup>1</sup>

|  | Average unit | 5% of units with the highest incomes | 5% of units with the lowest incomes |
|--|--------------|--------------------------------------|-------------------------------------|
| Food expenditure                                       | 17.3         | 10                                   | 41                                  |
| 1. Financially independent households and individuals. |              |                                      |                                     |
| Source: United States. Department of Commerce, 1984.   |              |                                      |                                     |

The low elasticity of demand underlying this negative correlation also makes it possible to understand the stability of performance in the mass consumer-goods sector. During the economic crisis of recent years this perform-

ance drew attention in particular (US Department of Commerce, 1981):

Demand for food is non-cyclical, therefore, processors are able to maintain sales and profits even during economic slowdown. In fact, the food processing industry is viewed by some as being recession-resistant.

While ensuring stability of performance and therefore profits for this industry, the relative inelasticity of demand is at the same time an obstacle to rapid average growth and to high average profit margins. This combination of 'positive' and 'negative' factors constitutes to a certain extent, the structural framework within which food groups are or have been required to develop their strategic courses of action. These courses of action will now be examined with special reference to American food firms which, while losing relative momentum in comparison with their European and Japanese counterparts, still massively dominate the

sector, just as American agribusiness massively dominates agribusiness worldwide.

## Food-firm strategies

In 1966, the Federal Trade Commission noted 'six major changes' in the development of the American food industry, since the Second World War: (a) the sharp decline in the number of firms; (b) increased concentration; (c) greater diversification by leading firms; (d) a significant increase in the number of major takeovers; (e) increased efforts at product differentiation; and (f) growing profitability of large groups compared with the smaller firms. The multinationalization of the main groups, the importance of which became clear after the FTC report was published, could be added to this list. Since then, most of these trends have become consolidated, and the market today is characterized by a small number of giant multinational firms holding oligopolistic positions in their respective subsectors of activity.

A regrouping of these trends brings out three major strategic lines of action, that is to say, concentration, diversification and multinationalization (however the last-mentioned is not, as will be seen, a course of action truly distinct from the other two).

## Concentration

Average concentration is much higher in the food industry than in American manufacturing industry as a whole. According to a recent study, this industry ranks fourth among the twenty major manufacturing sectors in terms of average concentration (Parker and Connor, 1979). This concentration is accompanied by a sharp decline in the number of firms.

The practically stagnating concentration rates for the period 1972-77 is probably linked to greater diversification characteristics of the 1970s, although it is quite possible that it is a short-term cyclical trend, since a powerful movement refocusing on food activities is currently under way in the large firms (see below).

The degree of concentration varies considerably from one food class to another (four-digit SIC class). There is a good deal of com-

TABLE 2. American food industry concentration (value of dispatches, several years)

| Year | Number of firms | Concentration rate |      |      |
|------|-----------------|--------------------|------|------|
|      |                 | R.4                | R.8  | R.50 |
| 1963 | 32 617          | 41.7               | 55.3 | 81.0 |
| 1967 | 27 706          | 42.1               | 56.3 | 82.2 |
| 1972 | 22 393          | 44.1               | 59.0 | 86.1 |
| 1977 | 20 978          | 44.1               | 59.1 | 86.5 |

Source: US Department of Commerce, 1981 (my calculations, based on four-digit SIC industrial classes—classes 2016, 2938 and 2047 not included).

petition in respect of certain classes, especially basic processed and/or low value-added products (where regional firms are still strong), whereas highly differentiated product classes show high and sometimes even very high concentration rates. Thus, in 1977, for chewing gum and breakfast cereal, four firms accounted for 93 and 89 per cent respectively of the value of dispatches (Parker and Connor, 1979). Similarly, there is a real duopoly, so to speak, for carbonated drinks, since, in 1982, two firms, PepsiCo and Coca-Cola held nearly 60 per cent of the market between them (Standard and Poor's Corporation, 1983).<sup>2</sup>

In several industrial classes, the true measure of concentration is at the product-line level (five-digit SIC classes). This is true of instant coffee for example, which, with an R.4 of 89.4 (1976 sales), is far more concentrated than the roasted coffee class as a whole. This also holds for a whole series of products like biscuits, TV dinners, etc., where product differentiation has established this bracket.

It is therefore in these high value-added subsectors that the leading groups succeed in avoiding the low profits and growth rates characteristic of the food industry as a whole and that oligopolistic competition comes into play. Generally speaking, the dominating positions in these profitable sectors have already been established and are highly protected. The initial cost for potential competitors is too high given the prospects for growth.

Product differentiation, which therefore seems to be a condition for concentration and oligopolistic power in the food industry, is achieved through massive recourse to advertising, which is in fact the main hurdle to be cleared in order to enter this industry. Designed to influence the consumer's perception of

the product—the difference between products being based most frequently on minor innovations or even on the illusion of a difference—advertising can create and maintain brand loyalty. Its importance is due to the fact that, in this mature industry, where there is stable global demand and usually no possibility of bringing technological advantages to bear, it is the prime form of the struggle for market share and price control.<sup>3</sup>

The strategic role of advertising as an entrance hurdle tends to be confirmed by the mere weight of the investments devoted to it by the leading groups. In 1982, no less than thirty of the hundred leading firms classified by publicity expenditure were in the food industry (food, including fast foods and beverages). These thirty firms had invested \$5 billion in advertising, which amounted to 6 per cent of their sales against an average of 3.4 per cent for the other firms (*Advertising Age*, 1983). Expenditure on this scale is of course the preserve of groups with enormous financial assets.

As a means of oligopolistic competition, advertising is all the more important since classes of highly differentiated products are generally aimed at target populations, themselves subject to change. For instance, the ageing of the American population prompted leading breakfast cereal groups—a sector in which three firms held 75 per cent of the national market in 1982—to redirect their advertising, aimed primarily at children, in order to reach 25- to 49-year-olds (Standard and Poor's Corporation, 1984).

Generally speaking, there is therefore a positive correlation between the degree of concentration, product differentiation and the intensity of advertising. Yet, while this correlation proves perfectly logical from the capital accumulation point of view—giant firms are active in the most profitable and most protected sectors—it none the less leads to the paradoxical situation that oligopolistic control of the markets and therefore of consumer patterns is exerted especially in food classes with the lowest nutritional value (chewing gum and sweets, sweet biscuits and cereals, cake mixes, carbonated drinks, etc.).

The power of the leading firms (and the resultant effects) is therefore due primarily to high concentration and extensive specialization

in high-return sectors. But they do not reveal the true extent of this power, since most frequently, these very firms also hold leading positions throughout the food industry. The Federal Trade Commission report mentioned above notes that as early as 1963 only 50 groups held the first 4 positions in 70 per cent of the 116 food classes (five-digit SIC). Moreover, these firms' activities are by no means confined to the food industry.

## Diversification

Although by the late 1940s most major firms were specialized in a single product or product line, some thirty-five years later nearly all of them had expanded their field of action. This diversification was horizontal as well as vertical and geographical, which meant that these firms produced a wide range of food and non-food products, they were highly integrated and covered extensive international markets.

### *Horizontal diversification*

With regard to sectoral horizontal diversification (i.e. in foods), the Federal Trade Commission reports that between 1954 and 1963 it had increased by 50 per cent for 200 firms with the highest value-added foods. The rate was much greater, 65 per cent, for the twenty biggest firms. This trend increased over a longer period for between 1950 and 1971, twenty-five major food groups had raised investments outside their main sectors of activity by 140 per cent (Connor, 1980).

The obvious effect of this type of diversification was to increase the degree of aggregate subsectoral concentration in the food industry. The takeover in 1984 of the giant Esmark Inc. by Beatrice Cos. (first American food firm), one year after Esmark bought Norton Simon, therefore made it possible for Beatrice both to broaden the range of dynamic food products over which it has oligopolistic control and to consolidate its position as a leader in the American food industry. The cost of these takeovers, \$2.8 billion and \$1.1 billion respectively (*Business Week*, 1984), gives an idea of the magnitude of the stakes underlying this type of diversification. Despite the increasingly

striking elimination of competition, the United States Government has not hastened to take antitrust measures to curb this movement.

Extra-sectoral (i.e. non-food) horizontal diversification is also a major trend. Using the number of employees as a variable, it can be seen that whereas in 1963, 17.7 per cent of the employees of agribusiness firms were engaged in other sectors of activity, in 1972, this rate had risen to 31.5 per cent, including tobacco (Connor, 1980). During the 1960s and especially the 1970s, the quest for new accumulation bases was particularly marked among the leading groups and at the end of this period (1981) the first thirty food firms and the first three beverage firms made 21 and 35.3 per cent of their sales respectively outside their main branch of industry (Stopford and Dunning, 1983).

With regard to the sectors towards which these firms direct their activities, it is not always easy to work out clear trends. The activities of Beatrice Cos. include the production of lamps, suitcases, clothing, chemical products, etc. Dart & Kraft is engaged in the manufacture of electric batteries and domestic appliances and in the development of holiday resorts. PepsiCo produces sports equipment and possesses a vast house-moving equipment and services network. In short, extra-sectoral diversification leads to the creation of enormous conglomerate complexes whose prime field of business is not always obvious.

Concurrently with the conglomeration of major food firms, groups originating in other sectors are diversifying into the food industry. Taking the number of employees variable again, it can be seen that between 1963 and 1972, the range of industrial categories with a significant rate of employment in food manufacturing had more than doubled, rising from 11 to 24 (Connor, 1980). In 1981, at least twenty-five of the hundred leading firms were active in the manufacture of food and beverages; nine of these had come from other sectors and made up to 30 per cent of their sales in the food industry.

Given the size of these firms, representation of their sales in percentages tends to minimize the extent of their activities. Thus, with only 8 per cent of its turnover coming from food, ITT earned \$1.9 billion in this sector in 1981. The size of the groups also affected their

position in different food markets. The tobacco giant, Philip Morris, holds oligopolistic positions in beer and carbonated beverages; Proctor & Gamble is the primary firm not only for detergents, soap and toilet products, but also for coffee, etc.

Several authors have underlined the major competitive advantages derived from diversification and conglomeration (Stopford and Dunning, 1983; Mueller, 1978, 1981). These advantages include economies of synergy, greater multisectoral market power, cross-subsidizing, predatory pricing, the absence of competition and other forms of collusion. Some of these advantages have been particularly exploited in the food industry. Cross-subsidizing, a practice in which the conglomerate uses excess profits in certain sectors to finance losses in other sectors, is supposed to have thus allowed several firms to maintain competitive positions in oligopolistic food sectors through massively subsidized advertising campaigns based on other operations.

#### *Vertical diversification*

According to the US Department of Commerce (1984):

The extent to which this industry [i.e. the food industry] uses its own products in the manufacturing process indicates that it is characterized by a series of vertically connected establishments, many of which produce semi-finished products which are further processed by other establishments within this sector.

The same source states that, of all the inputs (intermediary goods and services, value-added) used by this industry in 1972, 22 per cent was made up of agricultural and livestock products, 8 per cent of forestry and fishery products, 18 per cent of already processed food and 24 per cent of containers and packaging, storage and wholesale services, etc. Similarly, 37 per cent of the outputs were intended for intermediary users including other food firms (17 per cent) and public consumption facilities (12 per cent).

Designed to facilitate the procurement of resources and the selling of manufactured foods, in a word, to control the different links in the food chain, the integration of upstream and downstream food-processing activities is the oldest form of diversification in this in-



The American fast-food chain McDonald's in Tokyo. Kalvar/Magnum.

dustry. It does not seem, moreover, to have lost its interest, for, as Ghersi et al. (1980) recently observed:

The current trend in food engineering is characterized by the establishment of very high capacity, integrated, multipurpose industrial complexes involving related and/or complementary technological operations from the processing of raw materials straight through to the distribution.

Thus, in 1978, 7 per cent of the activities of the hundred leading world food firms (fifty of which were American) were upstream of agriculture (excluding animal feeds) and in agriculture itself while 17 per cent were upstream of processing.

The scale of diversification upstream is due less to what it represents in terms of the percentage of the corporate activities than to the socio-economic effects it produces. In many so-called underdeveloped countries, multiform agricultural integration is known to have disrupted traditional agriculture (Arroyo, 1980).

Despite its importance, especially when its socio-economic effects are taken into account, upstream diversification is less pronounced than downstream, where the large firms are established in wholesale and retail trade and in catering (restaurants, hotels, public establishments and work sites). Particularly significant over the past fifteen years or so is the development of restaurant chains, especially the fast food variety. In 1975, 35 of the biggest 200 American food groups controlled 95 food services operations, with sales of at least \$5.6 billion in the United States (Connor, 1980).<sup>4</sup>

### *Towards realignment*

Different types of diversification have therefore made it possible for the major food firms to expand their accumulation bases by entering food and especially non-food sectors where the growth-rates and profit margins are higher, just as they have facilitated the takeover of upstream and downstream food-processing activities. Concurrently, many groups originating from other industries have flocked to the food sector in order to benefit from its stability.

Of particular significance in times of crisis, these strategies, especially the extra-sectoral diversification of food firms, seem to have been

losing ground somewhat over the past year, and a significant movement back to core businesses is currently under way. This redirection is due to several factors, but a consensus seems to be established on the fact that the basic reason is a departure from the objectives of sales growth and profits in favour of the high returns on investment provided by the dynamic classes of the food industry.

Lower-return businesses are being dropped, and the excess money is being spent on the company's primary business, where such factors as market share and economies of scale provide a competitive edge. [Standard and Poor's Corporation, 1984.]

New-product development is the chosen weapon of many companies that were burned in the 1970s by unsuccessful nonfood diversification and are now frustrated by the food industry's 1 per cent to 2 per cent annual unit growth. [*Business Week*, 24 September 1984.]

It is no chance occurrence that this change in strategy is taking place in a context of economic recovery (however temporary it may be).

Historically, the food and beverage industries have lagged others in reaping the benefits of economic recovery. In the early stages of recovery, consumers are more inclined to buy those durable goods (automobiles, appliances, etc.) that were deferred during the hard times. [Standard and Poor's Corporation, 1984.]

Therefore, the stability of performance which protects the food industry in times of recession favours other sectors over it when the economy recovers. Renewed oligopolistic competition to share the dynamic food markets then becomes inevitable.

The effect of this strategic redirection will certainly be to make concentration rates in the food industry even higher. This trend is already emerging in a new rash of mergers and takeovers in the food industry at the level of the biggest firms in the sector. Since August 1982, there have been no less than twenty-five major transactions of this type, including seven by General Foods (third American group), the purchase of Esmark by Beatrice (first American group, see above) and the takeover of Carnation Co. by Nestlé SA. This last transaction, which allowed the Swiss giant to attain an almost if not actually monopolistic position in certain dairy-produce classes, cost \$3 billion and is the biggest non-oil takeover ever carried out.<sup>5</sup>



Advertisement of an agribusiness product, against a background of industrial pollution. T. Höpker/Magnum.

Without any doubt, the swing between concentration and diversification has not stopped once and for all, for the preponderance of one strategy over the other—and they have never been mutually exclusive—is largely determined by short-term economic circumstances. What is certain, however, is that control of the food industry and of key links in food chains is increasingly becoming the preserve of a few very large firms whose financial assets, market power and performance make them practically invulnerable. Moreover, these firms play a key role in the integration of food systems owing to their massive presence in world markets.

Multinationalization

Although the internationalization of American food production is no new phenomenon—direct

investments abroad (DIA) in the manufactured food sector had already attained \$222 million in 1922—the rate at which this process develops is accelerating rather dramatically (Table 3).

TABLE 3. American food investments abroad

| Year | Foods               |                        | Total manufacture   |                        |
|------|---------------------|------------------------|---------------------|------------------------|
|      | Amount (\$ million) | Annual growth-rate (%) | Amount (\$ million) | Annual growth-rate (%) |
| 1929 | 222                 | 4.3                    | 1813                | 5.4                    |
| 1957 | 723                 | 11.1                   | 8009                | 10.7                   |
| 1981 | 9134                |                        | 92480               |                        |

Source: based on several issues of *Survey of Current Business*.

For the period 1957–81, the annual growth-rate of food investments was nearly triple that of the period 1929–57. Moreover, it was slightly higher than that for the manufacturing

sector as a whole. This difference was clearly more marked during the 1974–82 economic crisis, the rates being 9.7 per cent and 7.5 per cent respectively. Furthermore, in 1982, when for the first time manufacturing DIAs showed negative growth falling from about \$92.5 billion (1981) to \$90.7 billion, food investments continued to grow (1.5 per cent).

Another indication of the degree of internationalization of food production can be obtained by comparing the value of production abroad and of exports (Table 4).

TABLE 4. Production abroad<sup>1</sup> and American food exports (sales in \$ millions)

| Year | Foods             |         | Total manufacture |         |
|------|-------------------|---------|-------------------|---------|
|      | Production abroad | Exports | Production abroad | Exports |
| 1959 | 2 810             | 1 382   | 21 100            | 13 865  |
| 1977 | 25 604            | 7 250   | 246 325           | 94 838  |

1. Sales by subsidiaries with majority control.

Source: based on several issues of *Survey of Current Business*.

In 1959, the value of food production abroad was twice that of exports;<sup>1</sup> in 1977 the proportion was 3.5 to 1. In relative terms, this dislocation of production grew more rapidly, once more, than that of the manufacturing industry as a whole, for which the output abroad/export ratio rose from 1 to 5 in 1959 to 2 to 6 in 1977.

The large firms in particular are involved in the multinationalization of food production. It is moreover possible to establish a correlation between the size of a group and its degree of multinationalization. Connor (1980) holds the view that in 1975, the sales of the subsidiaries of 187 of the 200 biggest American food firms accounted, on average, for 16 per cent of their turnover.<sup>6</sup> But whereas the fifty-seven leading firms made more than 20 per cent of their income abroad, the corresponding share for the sixty firms at the bottom of the list was 4 per cent (Connor, 1980). Multinationalization reaches even higher proportions for certain very big groups. Thus, in 1981, the sales of the subsidiaries of thirteen firms exceeded \$1,000 million and, on average, amounted to 33.5 per cent of their turnover (Stopford and Dunning, 1983). These sales totalled over \$23

billion or, to give an idea of the scale, a little more than Egypt's gross domestic product (GDP) for the same period.

This intensive multinationalization of productive activities is first and foremost a strategy designed to broaden the field within which the oligopolistic battle to share markets is waged. In this mature industry in which demand is stable and growth prospects limited—note in this connection the slowdown in the growth-rate and ageing of the American population—geographical diversification makes it possible for large companies to extend the concentration phenomenon on an international scale and therefore seize a large share of the global mass of profit generated by the food sector.

The question was raised earlier of this multinationalization of a sector in which a national industry, often very developed, already exists in most countries. According to the logic of oligopolistic competition, the presence of national firms cannot be perceived as an obstacle to foreign penetration: on the contrary, it encourages multinational groups to produce on the spot since exports alone would not suffice to combat protectionism and compete with local firms. Moreover it is through this productive strategy that major oligopolies have succeeded in wresting considerable slices of the market from the national sector and even in creating previously non-existent markets. This is especially true of the most dynamic industrial classes, with high entrance barriers (product differentiation, trade brands, etc.).

The quest for increased profit margins has been coupled, in the case of American firms, with a second objective, that is to say, maximized profit rates. This goal is attained on account of wage differences and the differential costs of agricultural inputs. As far as wages are concerned, the advantages of production abroad are considerable: in 1977, the hourly rate paid by American food multinationals was \$6.50 in the United States itself, \$5.46 in other developed countries and \$1 in the developing countries (the average rate abroad being \$3.42). And indeed, for that same year, no less than 32 per cent of these firms' manpower was working in foreign subsidiaries, the breakdown being 58 per cent (252,742 employees) in developed countries and 42 per cent (183,474 employees) in developing countries.<sup>7</sup>



Table 5 indicates the broad lines of the courses taken by food groups in their geographical diversification.

TABLE 5. American food investments abroad by region, over several years (in percentages)

| Year | All regions | Canada | Europe | Latin America | Other |
|------|-------------|--------|--------|---------------|-------|
| 1929 | 100         | 23.9   | 17.1   | 55.0          | 4.0   |
| 1950 | 100         | 47.0   | 13.3   | 32.7          | 7.0   |
| 1957 | 100         | 44.3   | 20.6   | 27.7          | 7.4   |
| 1973 | 100         | 29.1   | 41.7   | 15.9          | 13.3  |
| 1981 | 100         | 21.1   | 44.9   | 22.2          | 11.8  |

Source: based on several issues of *Survey of Current Business*.

Two comments can be made on this table. First, the period of rapid growth in multinationalization (see Table 3) coincides with a concentration of food investments in industrialized countries (period of development of high value-added foods); in 1981, nearly half of these investments (45 per cent) were made in Europe alone. Secondly, despite their relative decline until 1973, IDEs for Latin America accounted for a significant part of overall investments, especially those intended for developing countries.

The aggregate data in Table 5 do not give a full picture of the trends. In 1957, five countries alone (Canada, the United Kingdom, the Federal Republic of Germany, Mexico and Brazil) accounted for 76 per cent of investments (Horst, 1974). But in 1982, these countries' share had fallen to 57 per cent (*Survey of Current Business*, 1983). While remaining rather high, the concentration investments in a small number of countries therefore fell quite quickly.

The special importance that American food companies gave to industrialized and semi-industrialized countries (Brazil and Mexico, but also Venezuela and Argentina) is no doubt accounted for by the size and level of their economies. As Horst (1974) points out:

American food-processors are not producing anything like a representative basket of groceries, and, thus, do not find countries with low per capita incomes more attractive than those with high per capita incomes.

Despite these comments, it would be a mistake to think that food multinationals have not pene-

trated and are not trying to penetrate smaller markets. In 1982, for example, these firms recorded IDEs worth \$199 million in the Philippines (GDP per capita: \$790), \$108 million in Colombia (GDP per capita: \$1,380) and \$96 million in Panama (GDP per capita: \$1,910). Other countries with sizeable investments included the Republic of Korea, Taiwan, Thailand, Hong Kong and Indonesia (*Survey of Current Business*, 1983; World Bank, 1983). Taken together, the developing countries received 25.7 per cent of American food IDEs in 1981 against 19.5 per cent in 1973.

While diversified investments in the Third World have been directed towards economies that have undergone a certain degree of development—several of the above-mentioned countries are classified as 'newly industrialized countries'—there is reason to believe that this global redirection is dependent not only on traditional market criteria but also on the concern to reduce production costs, a consideration of particular importance during the economic crisis which was exactly when the redirection occurred.

The advantages in terms of wages in the developing countries have already been mentioned. But the importance of the lower costs of agricultural inputs must also be pointed out.

Perhaps more than any other variable, fluctuations in agricultural commodity prices can impact the industry's rate of earnings growth. When ingredient costs rise sharply, food companies find it difficult to fully pass along higher costs. . . . When ingredient costs fall, companies tend to maintain price levels and allow margins to expand. [Standard and Poor's Corporation, 1982.]

The particular interest of the low cost of agricultural and livestock products in the developing countries to food firms can therefore be understood.<sup>8</sup> This was particularly true after 1975, when international prices for these products rose considerably.

These advantages in terms of production costs (wages and inputs) explain the relatively high profit rates that food multinationals were able to achieve in the developing countries. In 1977, this rate was 17.7 per cent for six Latin American countries, against 12.7 per cent in the developed capitalist countries (Arroyo et al., 1980).

Lastly, to return to market considerations which, it must be recalled, are the decisive factor in strategies formulated by food firms, it is obvious that at least in the foreseeable future, these firms will continue to favour investments in industrialized and semi-industrialized countries where there is a sizeable solvent demand, but this does not mean that they will not also cast their eyes on populations with more modest incomes. It is in fact well known that relatively expensive products (with a low nutritional value) such as carbonated drinks and chewing gum are widely consumed in most countries in the world even by people who, in theory, cannot afford them. This is why in many developing countries the amount of income spent on food is not only relatively higher than in industrialized countries (see Fig. 1), but also quite inordinate in absolute terms.

### The internationalization of the American food market

The multinationalization of the food industry is, as seen above, mainly the work of large American oligopolies. But American groups are not the only ones contributing to this process. In 1981, of the sixty-five biggest food-and-beverage multinationals, nineteen were British,<sup>9</sup> four Canadian, two French, two Swiss, two Japanese and one South African (Stopford and Dunning, 1983). Like their American counterparts, these companies are massively present in different regions of the world. Their regional presence tends to complement that of the American groups. Given their extraterritorial diversification, the penetration of the American market itself by these companies is particularly significant.

The absolute and growing size of non-American food investments in the United States—a phenomenon of cross investments—does indeed show the great interest in the enormous American market for companies whose respective national markets are far smaller. It also confirms the rule of oligopolistic competition and the relative importance of fighting to share profits over increasing the

TABLE 6. American food investments abroad and non-American food investments in the United States, 1973 and 1981 (\$ millions)

| Year | American food investments abroad (1) | American food investments in the United States (2) | Ratio (1) to (2) |
|------|--------------------------------------|--|------------------|
| 1973 | 3 781                                | 1 279  | 2.9/1            |
| 1981 | 9 134                                | 4 777  | 1.9/1            |

Source: based on several issues of *Survey of Current Business*.

rates of capital gains (American salaries being among the highest). But especially because they are aiming at the theoretically most self-sufficient food market in the world, these investments in the United States demonstrate the extent to which food multinationals have succeeded in breaking down national frontiers, in integrating and in subordinating national food systems.

### Emergence of a world food system

This study on multinational food companies and, more specifically, the strategies deployed by them, has attempted to determine certain key ideas that would make it possible to understand the role of these giants in a wider process involving integration of the world food economy. It is not only these firms that are at work on this integration. Many studies have demonstrated how grain oligopolies have succeeded in promoting international flows of these 'strategic' products, how food aid itself and chronic hunger problems which justify this aid often serve the interests of large international capital, etc.

Therefore, agribusiness taken as a whole more than any of its component parts is the basis of the world food system in the process of development. Since the logic governing agribusiness is that of accumulation, this system cannot and will not be able to alleviate the problems of undernourishment, hunger and malnutrition, which are now wreaking havoc in the world.

[Translated from French]

## Notes

1. The figure rises to sixty-five if beverages are included.
2. By counting each bottling company separately, the survey seriously underestimates concentration in this industry, which operates largely by franchise.
3. Standard and Poor's notes that when brand loyalty is strong, prices can often be raised without prejudice to consumption levels (1983).
4. These figures become even more significant if non-food firms that have diversified into fast-food outlets are taken into account. For example, the Kentucky Fried Chicken chain belongs to the J. R. Reynolds tobacco company; in 1982, this chain, second in the United States, possessed 6,357 restaurants and made \$2.2 billion in sales.
5. The agreement reached in September 1984 still has to be approved by the Federal Trade Commission.
6. Includes certain groups for which food manufacturing is not the main activity.
7. Data based on 112 multinational food firms and their 1,388 foreign subsidiaries. *Survey of Current Business*, February 1982.
8. These products accounted for 22 per cent of food industry inputs in the United States in 1972.
9. Includes Unilever, an Anglo-Dutch company.

## References

- Advertising Age*, 8 September 1983.
- ARROYO, G., et al. 1980. Transnationales et agriculture. *Amérique latine*, No. 1, January-March, pp. 45-81.
- ARTHUR, H. B. 1982. The Role of Industrial Food in the Family Economy. *Research in Domestic and International Agribusiness Management*, Vol. 3, pp. 131-151. Greenwich, JAI Press.
- Business Week*, 24 September 1984.
- CONNOR, J. M. 1980. *The US Food and Tobacco Manufacturing Industries: Market Structure, Structural Change and Economic Performances*, Washington, D.C., United States Department of Agriculture. iv + 116 pp. (Agricultural Economic Report, 8.)
- CORPORATE DATA EXCHANGE, INC. 1979. *CDE Stock Ownership Directory: Agribusiness*. New York, CDE. 287 pp.
- DUNNING, J. H. 1981. *International Production and the Multinational Enterprise*. London, George Allen & Unwin. viii + 439 pp.
- GHERSI, G., et al. 1980. *Les cent premiers groupes agro-industriels mondiaux*. Montpellier, Institut Agronomique Méditerranéen de Montpellier. 457 pp.
- GOLDBERG, R. 1983. Introduction. *Research in Domestic and International Agribusiness Management*, Vol. 4, pp. ix-x. Greenwich, JAI Press.
- HORST, T. 1974. *At Home Abroad: A Study of the Domestic and Foreign Operations of the American Food Processing Industry*. Cambridge, Mass., Ballinger. xiii + 145 pp.
- MUELLER, W. 1978. The Control of Agricultural Processing and Distribution. *The American Journal of Agricultural Economics*, Vol. 60, No. 5, December, pp. 848-54.
- . 1981. *Conglomerates: A 'Non-industry'*. N.C. Project 117. 75 pp. (Working Paper Series, Studies of the Organization and Control of the US Food System.)
- PARKER, R. C.; CONNOR, J. M. 1979. Estimates of Consumer Loss Due to Monopoly in the US Food Manufacturing Industries. *American Journal of Agricultural Economics*, Vol. 61, No. 4, November, pp. 626-39.
- STANDARD AND POOR'S CORPORATION. 1982. *Standard and Poor's Industry Surveys* (New York), 12 August.
- . 1983. Food and Beverages: Basic Analysis. *Standard and Poor's Industry Surveys* (New York), 8 December.
- . 1984. Food and Beverages: Current Analysis. *Standard and Poor's Industry Surveys* (New York), 15 March and 5 July.

STOPFORD, J. M.; DUNNING, J. H.  
1983. *Multinationals: Company  
Performance and Global Trends*.  
London, Macmillan. ix + 147 pp.

*Survey of Current Business*, 1983.  
August.

UNITED NATIONS. CENTRE ON  
TRANSNATIONAL CORPORATIONS.  
1981. *Transnational Corporations in  
Food and Beverage Processing*.  
New York, United Nations.  
xii + 242 pp.

US DEPARTMENT OF COMMERCE.  
1981a. Processed Foods and  
Beverages. *1981 US Industrial  
Outlook for 200 Industries with  
Projections for 1985*, pp. 370-95.  
Washington, D.C., G.P.O. Bureau  
of Industrial Economics.

———. 1981b. *1977 Census of  
Manufactures*. Washington, D.C.,  
G.P.O., Census Bureau.

———. 1984. Processed Foods and  
Beverages. *US Industrial Outlook*

1984. Washington, D.C., G.P.O.,  
Bureau of Industrial Economics.  
———. *Survey of Current Business*  
(several issues). Washington, D.C.,  
G.P.O.

US FEDERAL TRADE COMMISSION.  
1966. *The Structure of Food  
Manufacturing*. Washington, D.C.,  
G.P.O., National Commission on  
Food Marketing. vii + 292 pp.  
(Technical Study No. 8.)

WORLD BANK. 1983. *World  
Development Report*. Washington,  
D.C., World Bank. x + 236 pp.

# Do transnational agribusiness firms encourage the agriculture of developing countries?

## The Mexican experience

Ruth Rama

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### Introduction

In recent years, governments and international organizations have shown a desire to know more about the behaviour of transnational corporations (TNCs) with a view to formulating policies on the acceptance and regulation of foreign agribusiness investments in developing countries. They have been particularly keen to discover whether or not these corporations contributed to food security, increased food production and the rural development of the recipient countries, and if so, to what extent.

Mexico is a very instructive case, since it is one of the developing countries to have received the most foreign agribusiness investment: over the past twenty-five years, the TNCs have been extraordinarily active in the Mexican processed-food market, setting up new industries, significantly increasing capitalization per employee in the food industry, promoting industrial concentration, bringing in radical technological and organizational changes, markedly influencing the diet of urban consumers, and helping to change cultivation patterns and the technological level of agriculture. The scope of the changes wrought by these firms in Mexico is possibly greater than in any other recipient developing country. This article analyses the impact of TNCs on cultivation patterns,

food supply, agricultural technology and the income of Mexican producers.<sup>1</sup>

The Mexican case seems to illustrate two theories about the way in which TNCs set about procuring raw materials, namely their tendency to import and their preference for dealings with farmers who are willing and able to invest in their holdings or the state.

Procurement of cheap raw materials in the host countries is not a priority goal for TNCs in food processing. They are basically interested in the developing countries' domestic markets, which are expanding as a result of rapid economic growth and increased urbanization—and Mexico is a typical case.<sup>2</sup>

When it becomes international, the TNC looks for raw materials where they are cheapest. It often buys them in its country of origin or in other developed countries and then processes and sells them in developing countries. In other cases, the TNC is committed to a technological policy geared to minimum use of raw materials, which it will not change, even in host countries with an abundance of cheap raw materials. This is why vertical TNC integration with the agriculture of developing host countries has not been as close as might have been expected. The corporations' marked tendency to import their inputs often helps to disrupt national food systems.<sup>3</sup> Under these

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circumstances, much of the subsidiaries' extraordinary dynamism can be transferred back to their countries of origin, especially those with food surpluses.

On the other hand, a locomotive effect on the agriculture of the host country only occurs under highly favourable conditions, such as those offered by a capitalist socio-economic environment in rural areas and/or strong state support for financing and technical assistance in rural communities. In Mexico the dynamism of the subsidiaries propagated and bore fruit most successfully only in regions that had already organized agriculture on a modern commercial basis before the TNCs arrived, and among farmers with medium-sized holdings and capital to invest and/or well-to-do peasants who had received substantial financial and technical backing from the state.

This contradicts, at least so far as Mexico is concerned, much of the literature on the effects of TNCs on the agriculture of developing countries, which—apart from its appraisal of the effects of these firms—seems to assume that they have the ability—and desire—to revolutionize the local rural environment by replacing peasant structures (or by making them 'functional', for their purposes) and by bringing about modernization on a vast scale.

In this article we shall first describe various features of the transnationalization of Mexican agribusiness. The disruptive effect of TNCs on the national food-supply system will then be analysed. Lastly, the effects of TNCs on Mexican agriculture and the pre-conditions for socio-economic development in rural areas will be outlined.

## **The transnationalization of Mexican agribusiness**

Agribusiness TNCs started to flock to Mexico early in the 1970s, attracted, among other things, by its rapidly expanding domestic market, a policy which accepted foreign capital, stable exchange rates and free currency convertibility, the availability of certain raw materials and protected markets for industrial products.

Mexico quickly became one of the main Latin American recipients of foreign agri-

business investment, especially investment from the United States, which controls about 80 per cent of TNCs. Between 1966 and 1981 investment in the Mexican food industry of capital from the United States rose from \$107 million to \$431 million at current rates. Its aim was mainly to obtain ownership of, or shares in, food-processing firms, since Mexican law makes it difficult for foreign investors to purchase land.

The most recent data available are for 1975 when TNCs controlled a quarter of the processed-food market (in 1970 their share was no more than 10 per cent). However, the degree of control is much higher in specific markets. TNC subsidiaries account for more than 80 per cent of total output of condensed, evaporated and powdered milk, instant coffee and tea, chewing gum, concentrates and syrups, and the same is true of the tobacco industry. The subsidiaries accounted for more than half the total output of animal feeds, corn flakes, flour, cocoa by-products, industrial desserts, starches and sweets.<sup>4</sup>

However, they have little impact on the production of traditional foods. They process small amounts of wheat, but practically no maize, beans or rice—the four staples of the Mexican diet.<sup>5</sup> In fact they mainly produce goods for middle- and high-income consumers whose diet has become more 'Westernized' over the last two or three decades as their income levels have grown. These social strata have replaced corn tortillas with white bread, and plant protein with animal protein, and they are eating more processed foods than before. Low-income urban sectors are now also consuming greater quantities of processed food-stuffs.

With the exception of the compound feeding stuffs and of the condensed, evaporated and powdered milk industries, the subsectors in which TNCs are most active account for only a small percentage of the output of the food industry, but they are the subsectors that have grown most since 1960.<sup>6</sup> In addition, TNCs have a much wider profit margin than national firms in the same branch (36.2 per cent and 5.2 per cent respectively).<sup>7</sup>

TNCs thus occupy a leading position. It should be remembered, however, that although they are the main causes of the changes in food



Advertisement of a well-known food multinational, Oaxaca province, Mexico. Abbas/Magnum.

production, distribution and consumption patterns now occurring in Mexico and in other developing countries, other factors have also played a part, for example the major national corporations and the policy governing agricultural prices and the supply of raw materials itself. Some of the effects of these firms' activities studied in this article are therefore attributable in part to interaction with other economic agents.

## **TNCs and food security**

Towards the mid-1960s, a situation started to emerge in Mexico which could be described as a dislocation of the national food-supply system, since the population's demand for basic food-stuffs ceased to coincide with the structure of production, and industrial demand for raw materials began to outstrip the ability of agriculture to respond.

This was a new situation which took shape in the mid-1960s, for Mexican agriculture had witnessed very high growth-rates over the preceding twenty-five years and domestic demand for food and inputs had been met at stable or even falling prices.

Encouraged by increased demand for food products of animal origin the TNCs modernized poultry farming and much of the pig farming and livestock raising from the late 1950s onwards, and set up a dynamic compound feeding-stuffs industry, in which Ralston Purina and Anderson & Clayton are the leading firms.

The animal feeds technology used by the TNCs was developed in the United States after years of research and, logically enough, is based on the use of raw materials (soya, sorghum, maize) which that country produces on a highly competitive basis. Subsidiaries established in Mexico covered their requirements with domestically produced soya and sorghum, the cultivation of which spread with amazing rapidity to regions that had previously been producing maize and other staple crops used for human consumption, and also with imports. This was not altogether surprising, for although other animal feed models are technically possible, agribusiness TNCs are not very flexible as regards the type of raw materials

they use, and few of them make it their policy to use local inputs produced by the host country.<sup>8</sup>

The spread of this technology contributed to a major change in Mexico's crop structure. Between the mid-1960s and the late 1970s, the surface area covered by the four staple crops and cotton fell by 1.4 million hectares approximately, and the area under oilseeds (soya and safflower) and feed grains rose proportionately. While the growth-rate of output of staple crops was lower than the historical population growth-rate of 3.4 per cent per annum, soya output grew at a rate of 15.1 per cent, sorghum by 13.7 per cent and alfalfa by 9 per cent.<sup>9</sup>

Agribusiness crops required by the TNCs replaced staple crops on some of the best land because guaranteed prices for the latter were low and remained unchanged over long periods of time, among other things.<sup>10</sup>

The agricultural pricing policy was based on the assumption that an abundance of low-priced supplies would always be accessible in the United States. As the American policy of agricultural export promotion and subsidies bore fruit, Mexico, on the doorstep of the 'world's granary' could hardly expect to maintain the policy of self-sufficiency in basic food-stuffs which it had followed until the 1950s, especially as the Mexican Government of the day wanted guaranteed supplies of cheap food-stuffs and agribusiness commodities to back up the country's industrialization.<sup>11</sup>

It also turned to the international markets for help in regulating the price of commodities required by the TNCs. There is evidence, for example, that official soya and sorghum programmes were deliberately managed during the 1970s to lower domestic prices.<sup>12</sup> One of the undesirable consequences of this policy was that the TNCs showed little interest in using locally available alternative raw materials (such as yucca, sugar-cane bagasse, agricultural residues, cocoa, coffee and rice husks, etc.) or even in stimulating domestic production of their traditional inputs, thus contributing to the exponential increase in their imports.

Despite the unusual growth in domestic supply, soya imports rose from \$400,000 to \$202.2 million between 1950-52 and 1978-80 while imports of sorghum, which were non-



existent in 1950–52 had risen to \$192 million by the early 1980s.<sup>13</sup>

In addition, much of the wheat and maize replaced by agribusiness crops had to be imported. During the same period, wheat imports rose from \$32.3 million to \$150 million while imports of maize rose from \$800,000 to \$315.7 million.<sup>14</sup> As a result, towards 1980 imports accounted for 31 per cent of domestic consumption of wheat, 30 per cent for maize and 25 per cent for beans.

This had a very pernicious effect on the food-supply system owing, first, to the spread of a technology that was not geared to the raw materials available in the country (since fodder crops were competing for the land with basic cereals) and, secondly, the spread—partly encouraged by advertising—of a food-consumption model which was acknowledged to be expensive for a country like Mexico where 35 million people still do not manage to satisfy their basic nutritional needs.

Some twenty years after this technology had begun to establish itself in a context of growing national concern over the social integration of the food-supply system, the Mexican Government made it clear that the compound feed industry should be based on raw materials which did not compete with the production of crops for human consumption in order to encourage cheap, nutritious food consumption patterns preferably based on plant proteins, and above all that adequate production of staple crops should be achieved. These measures proposed and partly implemented by the Mexican Food System in 1980–82 were only partially effective, because, among other things, they were short-term measures, whereas the reorganization of the food strategy involved required medium- and long-term measures.<sup>15</sup> However, they had the merit of drawing attention to the need to rethink the food-supply system in terms of meeting the people's nutritional needs and to regulate foreign investments in accordance with this priority goal.

On the other hand, in view of the fact that animal feed manufacturers in Mexico and other developing countries have been subjected to a barrage of criticism from the press, trade unions, and political and academic circles, and that public awareness of this type of problem has increased, TNCs might feel encouraged to

look into other possibilities for their feed formulas. In fact there could be a very large market for their new products since the review of the Mexican situation which has just been completed, also reflects the situation prevailing in other Central American and in Andean countries,<sup>16</sup> and to a certain extent even in non-grain-producing European countries such as Spain.

## **Effects on food chains**

In the preceding section we saw how—withstanding the distortion they bring about overall—TNCs have had a stimulating effect on one part of the agricultural sector.

This does not occur in all food chains (i.e. in all activities from primary production to food consumption, including processing and distribution). When TNCs are secondary industries, for example, the 'upstream' effect seems to be insignificant and the highly dynamic and capitalized agribusiness complex can be indirectly the client of peasant farmers whose productive response is limited for structural reasons or because they are linked to their customers through primary industries which are not fully developed. We shall therefore identify the chains in which TNCs do have a stimulating effect, the mechanisms they use and their impact in the agricultural sector.

## **Processed agricultural products**

The impact of the TNCs' subsidiaries on the total surface area under cultivation is limited by the fact that they process very little if any of the host country's mass-consumption foods. They therefore take a relatively small share in processing the ten main crops. The exceptions are sorghum and soya (60 per cent of these crops is purchased by TNCs) which cover a large part of the surface area under cultivation. On the other hand, TNCs handle a high percentage of the production of relatively less important crops such as strawberries, tobacco, tomatoes and cocoa.

The possibility of TNCs having an influence on agriculture increases when there is a direct link between the two, which is not always the case, since TNCs tended to focus on the secondary processing of agricultural commodities,

the stage of production when final products can be more clearly differentiated.

### **Dynamism and the technological advancement of industrial and agricultural production**

Those in Latin America who subscribe to the general belief that the agribusinesses with the most extensive foreign investment are associated with a rapidly expanding modernized agricultural sector would be surprised by the marked contrast, in many of the most transnationalized Mexican food chains, between, on the one hand, the great dynamism and the rapid pace of capitalization and technological modernization in the industry and, on the other, the low growth-rates and technological backwardness of the agricultural sector. For example, a high proportion of the sugar, tobacco and cocoa is bought by TNCs, which encourage a substantial increase in gross production value (GPV) and a comprehensive process of technological and organizational modernization in the corresponding processing industries. However, agricultural GPV growth has been extremely slow and the peasant farmers who produce the commodities continue to obtain low yields per hectare and use few modern inputs, despite the incentive of increased industrial demand.

Food chains in which the impetus given to industry by TNCs is not passed on to agriculture seem to have some common features. First, the TNCs in question focus on the secondary processing of agricultural products. Second, the price of agricultural products and of semi-finished goods required by the companies is subsidized, as is true of sugar or cocoa. Third, in their product differentiation strategies, the TNCs tend to pay more for packing and packaging, product presentation and advertising than for primary agricultural products. Fourth, TNCs use a minimum of agricultural commodities despite their low cost in the host countries. Fifth, primary processing is performed by antiquated industries. Sixth, agricultural commodities are provided mainly by peasant farms with little land or agricultural inputs.

On the other hand, the wheat, fruit and vegetables and soya/fodder chains seem to

indicate that the dynamism of the TNCs is being passed on to agriculture or that the manufacturing and primary sectors are in harmony. The high growth-rates of the corresponding processing industries and the technological and managerial restructuring process which they have undergone in recent years are consistent with the unusual growth of primary production and the modernization of commodity crop-growing.<sup>17</sup>

It should be pointed out that, in some of the examples mentioned, national data underestimate the effect of the TNCs, which is considerable when they organize procurement networks by concluding production contracts with farmers, as they do for fruits and vegetables, milk, eggs and pork. An illustrative case, since the firms' action can be isolated from other factors which led to increased milk production, is that of Nestlé in the state of Chiapas. Through genetic livestock improvement and new methods of handling and feeding animals, the firm doubled that state's output in only four years, with yields per animal rising from 2.5 to 9 litres.<sup>18</sup>

### **Market structures and supply systems**

Whether or not economic development in the host country's agriculture is encouraged seems to depend on the channels of supply used, on the one hand, and, on the other, on market structure and agricultural commodity pricing, which have a direct bearing on farmers' incomes.

The production contract system is the one which is most conducive to TNCs' contributions to agricultural production in terms of funding, technical assistance and the provision of agricultural inputs.

The contracts have certain common features. The TNC usually provides inputs in kind (fertilizers, seeds or plants, day-old chicks, compound feeds, etc.), occasionally low interest loans or endorsements for applications for bank loans, technical advisory services and constant monitoring of agricultural production. For his part, the agricultural producer provides his land, facilities and capital goods, pays for the electricity, water and manpower used and helps to supervise and organize the work. Their ability to provide technical assistance to



Transporting sugar cane to the mill, San Augustin, Colombia. G. Gerster/Rapho.

farmers usually gives TNCs a clear advantage over national firms in the same industry, since it facilitates the creation of supply networks and expands their markets.

The markets for products processed by TNCs are, generally speaking, monopsonic, or oligopsonic at the regional level; there is no futures market and supply is highly fragmented. In addition, where there is a system of production contracts or a producer-state-firm triangle, the markets for agricultural inputs and agricultural products are interrelated.<sup>19</sup> For all these reasons, producer prices are usually not very high and the positive effect of TNCs on farmers' incomes is due to the emergence of stable agricultural markets rather than to the especially attractive terms they offer.<sup>20</sup> Some farmers therefore rely on these contracts as a modest but sure form of income and speculate on the remainder of their harvest.<sup>21</sup>

In addition, the free market for products processed by TNCs has tended to work against

farmers' interests to the extent that, despite the enormous industrial demand, average farm prices have risen very little above the guarantee prices, which are minimum prices. This was what happened with sorghum during the 1970s. The reasons were, first, the cheap raw materials policy referred to above, secondly the firms' habit of concluding gentlemen's agreements at the regional level on the maximum prices to be paid for agricultural products,<sup>22</sup> and thirdly the extreme disorganization of suppliers.<sup>23</sup>

### **Distribution of rural income**

Various case-studies have noted that production contracts concluded by TNCs tend to accentuate, at the regional level, social and economic differentiation between farmers who supply the TNCs and other farmers, as well as among those who supply the TNCs. There is no doubt that the companies' establishment of their supply networks is preceded by careful

selection of farmers on the basis of their economic solvency, and the operation of the network tends to accentuate local socio-economic differences as a result of the change to more profitable crops and the emergence of a secure local market for the suppliers' products. A study on Del Monte shows that this firm's arrival in Bajío was followed by a land-concentration process, which seems to support this idea.<sup>24</sup>

Some TNCs also tend to increase differentiation between their own suppliers, since they pay higher unit prices the greater the volume of agricultural products and offer certain services, such as low interest loans, to the biggest suppliers only.<sup>25</sup>

### **Farmers' skills**

There seem to be two schools of thought on the effects of the production contracts system on the qualifications of farmers. For some, it provides an effective channel for the transmission of technology and skills from the firm to its suppliers, while others feel that in the long term, the farmers become less well qualified, since all technical and managerial decisions concerning the farms are taken by the TNCs.<sup>26</sup> In Mexico, there seems to have been an increase in skills, reflected in the effort of the TNCs mentioned above and in the fact that many of the TNCs' suppliers acquire the necessary skills to set themselves up successfully on their own account.<sup>27</sup> However, it is equally true that the farmers are no longer able to take decisions regarding production under contract.

### **Under what conditions do TNCs encourage agriculture?**

Generally speaking, a capitalist socio-economic environment in the countryside and strong state support, in respect both of supplies to the processing firms and of the modernization of agriculture, are considered to be pre-conditions for the transmission of TNCs' impetus to the agricultural sector of the host state.

### **Type of producers**

There seem to be very few examples of TNCs

establishing direct contact with farmers or peasants even having an 'upstream' effect on this type of agriculture.<sup>28</sup> Generally speaking, the view held by some authors to the effect that this type of agriculture is, on account of its extensive use of family work and its low earnings expectations, particularly 'functional' for modern agribusiness and that the spread of new forms of foreign investment such as production contracts encourages modernization in backward sectors of agriculture has not so far been borne out.<sup>29</sup> The TNCs conclude contracts after a careful selection process in which the availability of land, water, agricultural machinery and installations, access to credit and the formal and technical education of the candidates are taken into account. Small-scale agricultural business concerns are chosen in nearly all cases.

The study on Del Monte mentioned above, for example, stresses the high requirements set by the firms in respect of agricultural machinery and the financial resources of their vegetable suppliers in Bajío.<sup>30</sup> Similarly, Nestlé's initial group of suppliers in Chiapas was made up of stock farmers who were able to buy at least twenty head of imported cattle and who had irrigated lands and financial resources enabling them to add to their pastureland by sowing.<sup>31</sup>

The TNCs' preference for suppliers with capital is borne out by the very regions they have chosen. Apart from the major urban centres, TNC subsidiaries have in the main chosen to establish themselves in Bajío and the north-east, which were areas of cash crop agriculture even before TNCs arrived on the scene.

To conclude, it might be interesting to analyse two exceptions which prove the rule. Much of the strawberry crop produced in Bajío under contract is processed by the TNCs for export. It is grown largely on communal holdings.<sup>32</sup> In Michoacán, which became one of the most important strawberry-growing regions in Mexico after the arrival of TNCs, a few of these communal holdings have prospered and become agricultural business concerns while many others have been illegally leased to TNCs or to richer farmers of the region, some of whom now plant up to 400 hectares of strawberries.<sup>33</sup> One of the reasons for this is that strawberry growing is very expensive and the



Spraying pesticides in Mexico, over a tomato plantation. The crop is exported. The high toxicity of the chemicals threatens the lives of farm employees. Kaluzny/Gamma.

TNCs only provide part of the funding. It is only to be expected that poor communal landholders should have great difficulty in mustering the funds required for strawberry farming. Another very instructive case is Nestlé's failure in Chontalpa which, despite enormous financial backing from the government, confirmed the difficulty experienced by TNCs in establishing relations with peasant farmers.

There are several reasons why TNCs establish more links with modern farmers. The subsidiaries naturally prefer to do business with suppliers who can offer good-quality raw materials. In general, the peasants cannot do this because they have little land or water and inadequate inputs. In any case, their approach to their inputs differs from that of agricultural entrepreneurs.<sup>34</sup> Peasants are known to prefer to produce staples which will feed the family in hard times; they are quite understandably reluctant to replace subsistence crops with

cash crops which demand manpower resources and an investment capacity that they do not have. Lastly, another obstacle to the TNC subsidiary—peasant farmer link is the fact that Mexican agriculture is largely state-controlled or 'bureaucratized'.<sup>35</sup>

Hundreds of thousands of communal landholders become bound, in ways that leave them little economic freedom, to the large state agribusiness firms that process tobacco, sisal, sugar or coffee or with the Banco Nacional de Credito Rural, which according to some studies, limits the peasants' ability to take autonomous decisions as to which crops to sow and to establish relations with processing firms or private banks.<sup>36</sup>

However, in non-contractual agriculture, production that has progressed beyond the stage of peasant farming seems to have been most stimulated by the presence of TNCs. For example, the above-mentioned change in crop structure occurred in well-watered lands with

high input utilization and among farmers who are very sensitive to changes in relative crop profitability.<sup>37</sup> During this period the peasant farmers' behaviour remained unchanged, as they continued to grow corn and beans.<sup>38</sup>

In addition, the typological profile of some of the most dynamic agricultural products processed by TNCs reveals the predominance of transitional (fodder) and commercial (tomatoes) units.<sup>39</sup>

### The state and the TNCs

In recent years, the state has attached greater importance to the purchase and distribution of raw materials for the food industry and, at the same time, the firms' efforts to find supplies have been curtailed. There are several reasons for this.

State and parastatal firms and co-operative producer associations, strongly backed by the state, control the distribution of more than half the domestic production of certain agricultural or semi-finished products required by TNCs such as sorghum, soya, cocoa, sugar and tobacco.

There is no doubt that increased oilseed, cereal and powdered milk imports, over which the Comisión Nacional de Subsistencias Populares (CONASUPO) has a monopoly, have increased the importance of this parastatal as supplier to the food industry.

It also has to be remembered that the government's response to some of the serious rural conflicts of the early 1970s was to establish and/or nationalize major agribusiness complexes and establish BNCR credit and technical-assistance programmes. The state thus pushed out many rural intermediaries, including, in certain cases, processing companies which had the machinery to secure raw materials and to finance and organize rural production. This was what happened, for example, with the creation of Tabamex, a product of the nationalization of the subsidiaries of several tobacco firms operating in Mexico, such as British and American Tobacco, Philip Morris and several foreign exporters.<sup>40</sup>

Finally, in the long term, the TNCs themselves seem to prefer to replace production contracts by supply arrangements involving fewer financial risks. One reason is the adop-

tion of new agricultural practices and skills in the host country, since one of the *raison d'être* of the contract system is the transmission of information from the firms to the suppliers.

It is obvious, in some cases, that the agricultural organization effort which made it possible for TNCs to obtain adequate supplies was made basically by the state. For certain crops, moreover, the TNCs found the ground prepared when they arrived in the country because the state had earlier made immense efforts to modernize commercial crop-farming by an extensive agribusiness modernizing effort through establishing infrastructures, loan and technical advisory services and the agricultural pricing policy. This is particularly true in respect of the green revolution programme. According to one author, 'the nation's most progressive farmers with the largest holdings were won over to the green revolution in respect of wheat . . . paved with public funds, and at a very high price'.

In the case of sorghum, there is no doubt that thousands of fodder-crop producers could never have been able to become suppliers to TNCs had it not been for the financial and technical support provided by CONASUPO and BNCR which enabled them to modernize their farms.

### Conclusions

The first general conclusion confirms that direct foreign investment trends do not emerge in a vacuum, as a whole series of works on the subject seems to imply. On the contrary, the effects of the TNCs will depend on their strategies (technological policy, supplies policy, etc.) and on the economic policy and conditions in agriculture in the host country.

This apparently elementary observation must be stressed, for it would seem that not only was the dynamic potential of the TNCs in agriculture not fully turned to advantage, but the combination of the agro-industrialization model brought to Mexico by the TNCs and the national agricultural policy was in fact a negative one. In practical terms, a foreign investment policy using the inputs pattern of the country of origin and a food model which was expensive for a developing country was com-

bined with a national policy that discouraged the production of basic foods. The unintended effect of both factors was, as we have seen, the internal disruption of the national food-supply system.

The need for a regulation of direct foreign agribusiness investment in developing countries which would be much more than a merely palliative measure is therefore evident. As various United Nations agencies have recommended, this would mean capitalizing on the advantages of TNCs and reducing their disadvantages to a minimum. The developing countries should have a clear idea of what should and should not be expected from agribusiness TNCs, since their effects on agriculture and food production could be positive or negative according to the food chain in question or the type of agricultural producers with whom they are allied. Generally speaking, priority should be given to clearly specifying 'rules of the game' ensuring that corporate activities contribute to the attainment of food security, to the eradication of hunger and malnutrition and to rural development in the host country, or, at least, that they do not make existing conditions worse.

Of course, such measures would have the enormous advantage of not isolating host developing countries from the process of technological innovation now taking place in this industry worldwide (biotechnology, computerization, etc.) and which is transmitted by TNCs.

Regulation would lead to greater clarity and stability in the relations of TNCs with host developing countries and, in the long run, would make it possible for them to avoid the situations of conflict which could be produced by the undesirable effects of their activities, involving politically sensitive problems such as that of rural poverty or food supplies.

The second conclusion is that the dynamism of TNCs in the processing industry is not, in itself, guaranteed to boost agriculture. The outcome, somewhat surprising at first sight, is that TNCs often have little or no impact on the agriculture of the host country. This is especially true of secondary agricultural commodity processing industries. In some agribusiness chains, such as sugar, cocoa, tobacco or beef, TNCs have made the industrial machinery strikingly modern and dynamic but

they have had little impact on agricultural production or on the technological level of agriculture. In these cases, rather than face the difficult task of boosting the local production of raw materials, they prefer to secure exportable surpluses by pressing for a policy of subsidies for semi-finished goods and by using substitutes or technologies that use a minimum of raw materials.

In the third place, TNCs have had a very positive effect on agricultural supply levels and on the use of modern inputs by non-peasant farmers, mainly in areas that were already producing cash crops before their arrival in the country. TNCs preferred to conclude production contracts with small-scale agricultural entrepreneurs but, indirectly, also encouraged modernization by thousands of transitional producers whose status is qualified by one author as being somewhere between well-to-do peasants and North American style farmers. On the other hand, the few cases in which TNCs were allied with peasant communities ended in failure or led to such socio-economic polarization that many of the peasants had to lease their plots to richer farmers.

Fourthly, the production contracts would seem to have had a positive impact on agricultural yields and supplies of agricultural products, to have stabilized farmers' incomes and improved their technical-managerial skills. The negative side of the coin is that they seem to have helped to increase socio-economic differentiation in rural areas. These contracts, concluded for the production of milk, fruit, vegetables, chickens, eggs, pigs and improved seeds, involved a sizeable contribution from the firms in terms of finance, technical assistance and supervision of agricultural work.

Lastly, the state has played an outstanding and increasing role both in supplying processing firms and in modernizing the agricultural sub-sectors which produced some raw materials for those industries. With regard to oilseeds, grains and, in general, non-contractual agriculture, the trend for TNCs to distance themselves from agricultural activity is due both to decisions by the firms and to the state's socio-economic control mechanisms in rural areas. In many cases the state has disbursed large sums to fund and provide technical support for the production of commodities needed by the TNCs;

as well as to subsidize storage and transportation, without there being—as there was in the previous case—any contribution from the firms. This again makes clear the need for careful identification of the effects of the TNCs in the

light of circumstances and for study of the long-term financial cost of attracting foreign capital to the host country.

[Translated from Spanish]

## Notes

1. R. E. Montes de Oca and J. Zamorano, 'La articulación agricultura-industria en los principales granos y oleaginosas', *Economía Mexicana*, Mexico City, Sector Agropecuario, 1983.
2. M. Padilla, G. Gherzi and M. Allaya, *Les cent premiers groupes agro-industriels mondiaux*, Montpellier, IAM, 1983.
3. G. Arroyo, R. Rama and F. Rello, *Agricultura y alimentos en América Latina. El poder de las transnacionales*, Mexico City, ICI-UNAM, 1985.
4. In this article, TNCs are considered to be companies in which the share of foreign capital is equal to or more than 15 per cent of the total which is the Bank of Mexico's criterion. However, according to R. E. Montes de Oca and G. Escudero ('Las empresas transnacionales en la industria alimentaria mexicana', *Comercio Exterior* (Mexico City), Vol. 31, No. 9, 1981), the share of foreign capital in this sector is never lower than 30 per cent and in most cases it was more than 60 per cent.
5. Ibid.
6. Ibid.
7. J. M. Quijano, *Concentración, desnacionalización y crédito. El caso de México, 1970-75*, Mexico City, CIDE, 1979.
8. OECD, *Impact of Multinational Enterprises on National Scientific and Technological Capacities*, Paris, OECD, 1979; M. Marloie, *Le marché mondial des tourteaux oléagineux: Une nouvelle division internationale du travail*, Paris, INRA, 1974.
9. CESP, *El desarrollo agropecuario de México. Pasado y perspectivas*, Mexico City, SARH-ECLA, 1982.
10. The price of corn remained unchanged between 1963 and 1974, like that of beans and rice between 1961 and 1973, and wheat between 1960 and 1973. On the other hand, during the 1970s, official credit support for basic crops was less than that granted to agribusiness crops, though basic crops accounted for a larger proportion of total land under cultivation. R. Rama and F. Rello, *Estrategias de las agroindustrias y política alimentaria en México*, Mexico City, Ediciones Nueva Imagen. (In press.)
11. ECLA, *Caracterización de la política alimentaria mexicana en diferentes períodos de los años veinte a los años setenta*, Mexico City, ECLA, 1982.
12. Grain and oilseed imports are the monopoly of the Comisión Nacional de Subsistencias Populares (CONASUPO), the parastatal basic foods company. The TNCs and other big firms have long been calling for free imports which were allowed for a few months only, early in 1979.
13. CESP, op. cit.
14. Ibid.
15. ECLA, 'Los estilos de desarrollo y la política alimentaria en México', document prepared by R. E. Montes de Oca, Santiago de Chile, September 1983.
16. Arroyo et al., op. cit.
17. D. Barkin and B. Suarez, *El fin de la autosuficiencia alimentaria*, Mexico City, Ediciones Nueva Imagen, 1982; R. Rama and R. Vigorito, *Las empresas transnacionales en América Latina. El complejo de frutas y legumbres en México*, Mexico City, Ediciones Nueva Imagen, 1979; Rama and Rello, op. cit.; Montes de Oca and Zamorano, op. cit.
18. A. Quintar, 'Las empresas transnacionales en la agro-industria de lácteos. El caso de la compañía Nestlé en México', Facultad de Ciencias Políticas, UNAM, 1983. (Master's thesis.)
19. C. D. Scott, 'Transnational Corporations and Assymetries in the Latin American Food System', Conference on 'The Americas in the New International Division of Labor', Gainesville, University of Florida, 1983.



20. Rama and Vigorito, op. cit.
21. V. St Clair, 'Foreign Agribusiness. Area of Sensitivity', *Mex-Am Review* (Mexico City), 1975.
22. ECLA, *Las empresas transnacionales en la agroindustria mexicana*, Mexico City, ECLA, 1981.
23. Associations of farmers and communal land holding unions in the north-east which sell wheat and sorghum directly to the manufacturers at a fixed minimum price with no maximum set are an exception. The Banco Nacional de Credito Rural (BNCR) usually acts as a mediator between the manufacturers and the communal landholders; see Rama and Rello, op. cit.
24. NACLA, *Bitter Fruits. Del Monte*, New York, NACLA, 1977.
25. Quintar, op. cit.; Rama and Vigorito, op. cit.; St Clair, op. cit.
26. Scott, op. cit.
27. Some former suppliers of vegetables and milk to TNCs have broken off relations with these firms to set themselves up on their own account, as pointed out by Quintar, op. cit., and Rama and Vigorito, op. cit.
28. Peasant farming units are understood as those using family labour almost exclusively and paying less than 25 minimum wages per year. Transitional units are those paying from 25 to 500 minimum wages a year, which implies the use of wage labour as well as family labour. Agricultural business concerns pay more than 500 minimum wages per year and consequently only use wage labour. See ECLA, *Economía campesina y agricultura empresarial. Tipología de productores del agro mexicano*, Mexico City, Siglo XXI, 1982.
29. C. Oman, *New Forms of International Investment in Developing Countries*, Paris, OECD, 1981.
30. NACLA, op. cit.
31. Quintar, op. cit.
32. The communal holding is a form of landownership established by the Mexican Revolution whereby villages or peasant families are allowed to use the land, while 'economic ownership, the power to set land aside for specific purposes, is the exclusive right of the state'; G. Gordillo and F. Rello, *El movimiento campesino. Situación actual y perspectivas*, Mexico City, Era, 1983.
33. E. Feder, *El imperialismo fresa*, Mexico City, Ediciones Campesina, 1977.
34. ECLA, op. cit.
35. F. Rello, *El Leviatán lagunero*, Mexico City, 1982. (Mimeo.)
36. Ibid.
37. CESPA, op. cit.
38. G. Rodríguez, 'Campesinos, productores transicionales y empresarios en la crisis agrícola. (Conducta productiva diferencial en siete de los principales cultivos)', *Economía Mexicana*, Mexico City, Sector Agropecuario, 1983.
39. ECLA, op. cit.
40. M. Teubal, *Tabaco, El desarrollo agroindustrial y los sistemas no alimentarios*, Mexico City, SARH-CODAI, 1982. (Documento Técnico No. 26.)

# Small farmers and food production in Western Europe

Peter Hamilton

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## Introduction

The scope of this article is necessarily broad—covering Western Europe<sup>1</sup> from 1945 to about the present day—and thus a number of initial reservations are in order. Clearly, to attempt to cover all of the social, economic, political (and, to a certain extent, cultural) trends affecting ‘small’ farmers in such a brief space implies dealing with the issues in a very general fashion. Raising general points about societies as diverse as those to be found in Western Europe also implies that much intra- and intersocietal variation will have to be ignored. Yet it is arguable that many of the most important trends affecting food production in Western European societies have had broadly similar consequences: rural economies and social structures have everywhere felt the same hammer blows of ‘agricultural modernization’, and rural people have by and large reacted to them in similar ways. They have voted with their feet in many cases, in a large-scale rural exodus whose history has yet to be written, though a number of individual country studies exist.<sup>2</sup>

A number of common features of Western European rural societies reflect long-term processes of structural and institutional change in agriculture which have gone on everywhere.

Mechanization, the diffusion of scientifically based techniques of crop cultivation and animal husbandry, the heavy investment in capital-intensive systems of farming, and the political ‘incorporation’ of agricultural industry, have paralleled the rapid decline in the number of agricultural workers and a consequent increase in farm sizes (both in terms of area and business size). If the available statistics for the EEC countries alone are scrutinized, it will be clear that the number of farms has fallen dramatically, but in a fairly uniform manner (Denmark and Ireland represent exceptions). For example, the number of farms in 1979 was no more than 70 per cent of the 1970 figure, and in most countries under half of what it was in 1965. Table 1 provides data for the period 1965–79.

The processes which have produced the statistics shown in Table 1 have been general. Affecting all of the Western European countries, they have involved extensive rural depopulation, declining rural labour markets, increasing specialization and concentration of agriculture, and in some regions an emphasis on agribusiness, the disappearance or marginalization of peasant farmers, and the creation of food surpluses.

In the most general terms it is arguable that the factors outlined above have been

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TABLE 1. Number of holdings in European Community member states, 1965-79<sup>1</sup>

| Country                   | Index | 1965                   | Index | 1970      | Index | 1975      | Index | 1979                   |
|---------------------------|-------|------------------------|-------|-----------|-------|-----------|-------|------------------------|
| Belgium                   | 123   | 225 189                | 100   | 183 095   | 78    | 142 800   | 53    | 97 000 <sup>2</sup>    |
| Denmark                   | 140   | 196 100 <sup>3</sup>   | 100   | 140 200   | 91    | 127 600   | 86    | 120 000                |
| France                    | 121   | 1 918 000 <sup>4</sup> | 100   | 1 588 000 | 84    | 1 333 900 | 69    | 1 103 000              |
| Germany<br>(Fed. Rep. of) | 134   | 1 451 600              | 100   | 1 183 100 | 84    | 933 800   | 68    | 807 000                |
| Ireland                   | 101   | 283 456                | 100   | 279 450   | 97    | 271 100   | 93    | 260 000 <sup>5</sup>   |
| Italy                     | 120   | 4 294 000 <sup>6</sup> | 100   | 3 591 000 | 74    | 2 657 300 | 61    | 2 192 000 <sup>5</sup> |
| Luxembourg                | 118   | 9 002 <sup>7</sup>     | 100   | 7 608     | 82    | 6 200     | 66    | 5 000                  |
| Netherlands               | 143   | 264 339                | 100   | 184 613   | 88    | 162 500   | 72    | 132 000                |
| United Kingdom            | 133   | 437 900                | 100   | 328 700   | 87    | 286 000   | 79    | 260 000                |

1. Actual and indices (1970 = 100).

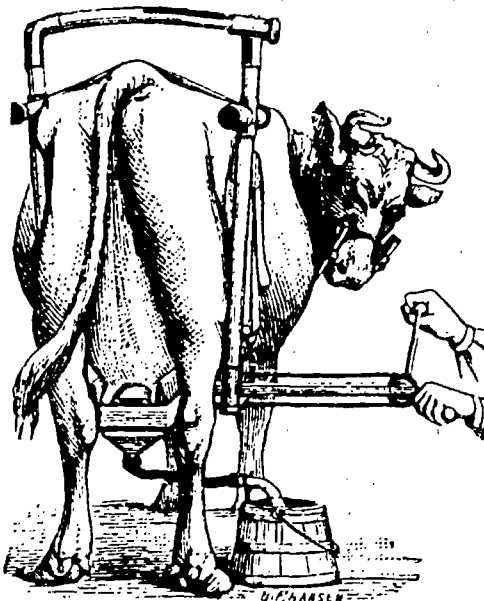
2. 1978. 3. 1960. 4. 1963. 5. 1975. 6. 1961. 7. 1966.

Source: Commission of the European Communities (CEC), *Factors influencing Ownership, Tenancy, Nobility and Use of Farnland in the Member States of the European Community*, Luxembourg, 1982.

interdependent: the decline and marginalization of historically 'small' or 'peasant' farmers within European societies have been the quid pro quo of agricultural development and increasing food production. What is most paradoxical about this situation is that while agriculture has received massive state subsidy in most European countries in order to protect farmers from the inevitable economic consequences of their own increasing productivity, this transfer of resources to the rural population has been quite unequally distributed. Because of the way in which the transfer has been 'managed' through the essentially corporatist<sup>3</sup> agencies linking state and agricultural organization, the distribution of subsidies and other aid has benefited the 'large' farmer at the expense of the small one. It has even been the means of excluding certain 'traditional' or 'inefficient' farmers from the domain of commercial agriculture altogether—through the operation of a complex system of basically administrative rules governing advice, support and subsidy which have the force if not the foundation of civil law.<sup>4</sup> Thus the patterns of inequality that characterize rural society in Western Europe are predominantly based on the distribution of resources to the agricultural sector. But this sector never operates 'normally': it is a constant source of varied problems, and requires intervention by the state in the form of an *agricultural policy* which is always inflexible, costly and barely tolerated by public opinion.<sup>5</sup> In the context of Western Europe, this agricultural policy has functioned at two identifiable levels.

First, at a national level, within all European states, directed towards agricultural modernization and food security. Second, since the development of the EEC, at an increasingly extensive interstate level, directed towards the harmonization of food production policies and the structural changes necessary to achieve them.

The results of such policies in terms of food security have been impressive: France has become one of the major food exporting countries in the global economy, while the United Kingdom has increased its self-sufficiency in basic foods by ratios of 3 : 1 for some products since the pre-war period, for example.<sup>6</sup> The strategic importance of food security should not be underestimated as motivation for particular aspects of agricultural policy in European societies, of course, and that is why it is enshrined within the EEC's Common Agricultural Policy (CAP). However, the means by which food security has been achieved have themselves accelerated the depopulation of rural regions, and contributed to their social and cultural impoverishment. An EEC report of 1980, for example, noted that the gap between the richest and poorest regions of its member states widened considerably during the 1970s.<sup>7</sup> A calculation combining EEC statistics with those of Greece, Spain and Portugal indicated that the income disparities between the ten richest regions (all urban) and the ten poorest regions (all rural) of Western Europe widened from 5.6 : 1 in 1970 to 7.8 : 1 in 1977.<sup>8</sup> While such income disparities are not uniquely



Danish milking machine of 1892.

the result of agricultural policies, the fact that all ten of the poorest regions contain the largest numbers and proportions of small farmers in Western Europe<sup>9</sup> (defined in terms of size of farm units) would seem to suggest that agricultural policies have done little to check, let alone reverse, their growing impoverishment. In fact, many of the regions experiencing severe economic problems within Western Europe are highly rural, with low population densities, remoteness from large urban centres, high levels of agricultural activity and a predominance of traditional farm structures—and their relative deprivation is closely related to the presence of large numbers of small farms within them.

It is understandable, perhaps, that the continual problems of agriculture in Western Europe—food surpluses, farmers', demonstrations, the ever-rising cost of the CAP, which regularly consumes four-fifths of the EEC budget—are laid at the door of the small farmer. It is often suggested that the small or peasant farmer is a 'problem', by comparison with his large or 'commercial' colleague, and one that has to be 'solved' by easing him out of agriculture altogether. Much popular mythology surrounds the assumption that the

massive cost of agricultural support in Western Europe is generated by the need to keep hundreds of thousands of small and, therefore (the argument goes) 'inefficient' farmers producing milk, wine, vegetables or olive oil which no consumer wants. At stake, however, is the continued existence of a socially, economically and culturally significant sector of the rural population whose role in the future of Western Europe will be crucial if certain issues concerning the quality of life are taken into account. But perhaps more importantly, the 'small-farmer problem' will not simply disappear through changes in the age structure, or greater mechanization or productivity. Farms throughout Western Europe are increasingly taking on characteristics of the 'small' or 'peasant' farms of the recent past. Despite increases in the areas farmed, and improvements in farm structures, European farms are increasingly family-oriented in character, mainly because they no longer hire labour, which has moved to the urban labour markets.

### Agricultural policy and the small farmer

In becoming increasingly dependent on family labour as the degree of incorporation within the capitalist market system is extended, European farms show signs of retaining a form of production which—at least on the surface—retains a 'pre-capitalist' aspect. Indeed, both Marxist and non-Marxist theories of agricultural development have assumed that the incorporation of agriculture within the capitalist economy requires the creation of a small number of large capitalist farms able to reap the benefits of economies of scale, and that the small family farm is either a pre-capitalist survivor or a 'traditional' brake on progress towards this goal. The much vaunted *Rapport Mansholt* (1968), of the EEC, for example, contained within it the assumption that the development of European agriculture in the member states of the EEC (then numbering six) required the creation of farms of considerably larger size than those currently existing. 'Ideal' sizes were even specified: 80–120 hectares for cereals, 40–60 cows for dairy farms; 150–200 head of cattle for beef production. This called for

continued diminution of the active agricultural population. Mansholt's ideas were incorporated within an important directive issued in April 1972 concerning the modernization of farm structures—which emphasized the need for a concentration of production units, and the selective use of the system of grants and subsidies to assist such a process.

Both CAP and national policies have tended to present an image of 'two agricultures' in Western Europe—one composed of a mass of small peasant farms, the other constituted by an élite of large, modern, progressive and profitable commercial farms. The exception to this model is the United Kingdom, where large-scale farming, in England at least, is predominant; but even here, the 'small farm' problem exists outside the main lowland regions. The assumption of policy-makers has most frequently been that while the mass of small farmers require short- to medium-term support, they are destined to disappear either through 'natural' wastage or through incorporation within the 'advanced' sector.

If the aims of agricultural policy—at both a national and supranational level—have been to ensure food security while maintaining or improving farmers' incomes, these have been effected at a time of considerable outflow of labour from the agricultural sector to other sectors of the economy. Certain policies have aimed at assisting elderly farmers or those with small and ill-structured farm units to leave the land (see Directive 72/160 of the EEC), but these have only been effective where other circumstances such as strong demand in other labour markets have reinforced them. In France, for example, schemes such as the Indemnité Viagère de Départ (IVD) and associated policies of structural reform, were apparently effective in the 1960s, although by the 1970s there was a considerable decline in the number of elderly farmers using the scheme. The IVD offered a pension to elderly farmers who were willing to give up their land to allow

its regrouping into more manageably sized farming units. Associated schemes provide for the retraining of those leaving agriculture, and for the relocation of farmers moving to less densely populated regions. Introduced by a law in 1962, the growth and decline of the IVD can be seen in the figures set out in Table 2.

Between 1963 and 1973 some 400,000 *chefs d'exploitation* took the IVD, liberating about 7 million hectares of land, and enabling some 500,000 young farmers to be installed or to increase their farm size. However, it is difficult to know whether the IVD actually increased the rate at which elderly farmers left the land: an analysis of INSEE's data would seem to suggest it had little effect. At a supranational level, it would appear that the EEC directive on early retirement (72/160) has not been applied with any vigour in any of the EEC countries—and neither Denmark nor Italy have implemented it at all, while in Ireland it is clearly less attractive than existing national retirement or welfare provision.

Clearly, very considerable structural changes have occurred in Western European agriculture as a result of the out-migration of rural workers—whether assisted by structural reform policies or 'sucked out' by the attractions of urban labour markets. Indeed, it is now conventional to acknowledge the role played by agricultural-product price-support policies in the advantages enjoyed by larger farms, which have brought about many of the structural changes which we have discussed. None the less, the continued numerical importance of small farms in most of Western Europe (the United Kingdom is a notable exception for particular historical reasons) can be clearly seen in Table 3.

It will be readily noted that, on the data set out in Table 3, only the United Kingdom and Luxembourg have more holdings in the over-twenty-hectare category than in the under-twenty-hectare category. Only three states have more than 10 per cent of their holdings in the

TABLE 2. IVDs allocated between 1964 and 1974

| 1964-65 | 1966   | 1967   | 1968   | 1969   | 1970   | 1971   | 1972   | 1973   | 1974   |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 32 279  | 40 385 | 34 726 | 33 627 | 80 460 | 74 370 | 58 256 | 48 252 | 38 067 | 31 388 |

Source: J.-P. Girard et al., *Les Agriculteurs*, Vol. 1, p. 37, Paris, INSEE, 1977.



An agricultural show at Sedbergh, Cumbria, United Kingdom. I. Berry/Magnum.

TABLE 3. Distribution of holdings by size, EEC member states 1979 (percentages)

| Country             | Hectares |      |       |       |                  |
|---------------------|----------|------|-------|-------|------------------|
|                     | 1-5      | 5-10 | 10-20 | 20-50 | > 50             |
| Belgium             | 29.1     | 20.6 | 26.8  | 19.7  | 3.8 <sup>1</sup> |
| Denmark             | 11.3     | 18.1 | 26.8  | 34.2  | 9.6              |
| France              | 19.4     | 14.9 | 21.2  | 31.0  | 13.5             |
| Germany (Fed. Rep.) | 32.1     | 19.0 | 23.1  | 22.1  | 3.7              |
| Ireland             | 17.3     | 18.2 | 31.1  | 26.0  | 7.4 <sup>2</sup> |
| Italy               | 68.5     | 17.2 | 8.4   | 4.2   | 1.7 <sup>3</sup> |
| Luxembourg          | 19.5     | 11.1 | 15.0  | 39.1  | 15.3             |
| Netherlands         | 24.7     | 20.5 | 29.3  | 23.2  | 2.8              |
| United Kingdom      | 14.5     | 12.5 | 15.5  | 26.2  | 31.3             |
| EEC <sup>4</sup>    | 42.9     | 16.9 | 16.5  | 16.9  | 6.8              |

1. 1978. 2. 1975. 3. 1977. 4. Total number of holdings: 5,808,800.

Source: CEC, *European Communities, Basic Statistics*, Luxembourg, 1981.

over-fifty-hectare category (France, Luxembourg, United Kingdom).

The widespread emphasis, in both national and supranational agricultural policy, on pro-

duct price support has provided considerable economic advantages to the large farms—notwithstanding the remarkable reinforcement of family forms of farm organization.

The intellectual background of the belief in the efficiency of large units has a respectable pedigree. The French physiocratic economist Quesnay, writing as early as the end of the eighteenth century, argued that

land employed for the cultivation of grain crops should be put together as much as possible in large farms managed by wealthy farmers, because there is less expenditure in the maintenance and repair of buildings, and proportionally much lower costs and much greater net product, in big farms than in small farms.

Since Quesnay's time, the merits of the large versus the small farm have been extensively debated. But the debate has not been merely an intellectual game: for theories of the 'incorporation of agriculture within capitalism' have had real consequences in political and economic terms, influencing the development of state and

collective farms in Eastern Europe, and the elaboration of policies designed to benefit large 'efficient' producers within Western Europe. The debate is about the transformation of agricultural work as a concomitant of capitalist industrialization.

Marx, responsible for much of the form in which this debate has been conducted, was perhaps as brilliantly one-sided about how this rural transformation was to take place as he was about transformations of the urban sector of industrial production. It remains true that his inability to see beyond the case that best fitted his favourite thesis has been responsible for a certain degree of theoretical confusion about the social development of agricultural production within Western European capitalist societies. For Marx built a theory about the forms that capitalism would take in agriculture with excessive regard to what was happening during his own lifetime in Great Britain. It is not surprising that Great Britain appeared to Marx to be the leading country in the rise of industrial capitalism, and perhaps no less surprising that industry's counterpart—agriculture—should be seen similarly as indicating the path for all other capitalist societies to follow.

This would not have mattered so much if Marx's ideas about capitalist development in agriculture had simply been confined to projecting trends in British farming. But instead they were directed to predictions about the demise of peasant farming which ignored the historical particularity of the British case. Furthermore, such ideas were translated into practice in a number of societies where the peasantry was thought to be an obstacle to agricultural progress, and led directly to the creation of state and collective farms whose results have been generally less impressive than either the peasant farms they replaced or capitalist farms.

In the realm of rural development in the so-called Third World, Marx's ideas have received an even more severe test, as they have been adapted to the situation of peasant societies marked by colonial exploitation as well as to indigenous social and cultural conditions quite different from those of nineteenth-century Western Europe with which Marx was familiar. Hence the development of agricultural capitalism in such societies has taken forms con-

siderably at variance with Marx's predictions, and has led many Marxist development theorists to make quite major modifications to classical Marxist theory. Indeed, it has even been argued that to take Marx's predictions about the capitalist development of agriculture at face value is to deny that rural development in 'underdeveloped' societies can be differentiated in any significant way from rural development in 'advanced' capitalist societies—the former being simply at a 'lower' level of the process than the latter, and thus at a predominantly 'feudal' rather than 'capitalist' stage in the development of the forces and relations of production.

Thus, despite the problems inherent in his formulations, Marx's prediction of an increasing concentration of the control of farmland in the hands of capitalist entrepreneurs, employing the dispossessed former owners of small peasant farms as agricultural labourers—while the landowner is stripped of his role as organizer and master of the production process, becoming no more than a 'receiver of rent'—has for over a century been the focus of debate over the failure of agriculture to follow the same course as manufacturing industry. This debate has called into question the nature of peasant economy and society, of pre-capitalist modes of production, of the transition from feudalism to capitalism, and of the demonstrable survival, persistence—and even expansion—of farming based on family ownership and labour in countries such as the United Kingdom and the United States where conditions seemed the most propitious for the creation of large capitalist farms.

Central to the whole debate about agrarian transition, as the incorporation of agriculture within capitalism is often termed, is the role of the small or peasant farmers. Do they constitute a type of 'transitional' social formation of small proprietors or 'petty commodity producers' whose future role is to become a dispossessed agricultural and urban proletariat? This formulation follows Marx's own, which may be seen as a radical rejection of the 'development problématique' *tout court*. Certain passages of Marx's writings (especially from Volumes 1 and 3 of *Capital*) indicate that he viewed the capitalist development of agriculture as an indispensable element of capitalist indus-

trial development. It is perhaps unfortunate that Marx focused his attention on the historical experience of Great Britain in devising an analysis of capitalist agriculture. His theory of industrial capitalism, in taking Great Britain as a model which other societies would inevitably follow, led to the rather atypical de-peasantized agriculture of Victorian England being constituted as the prototype of agrarian capitalism.

For Marx, capitalist society was inevitably committed by the laws of capital formation to the concentration of the social structure into three distinct classes: *rentiers*, capitalists and proletariat. The two former classes would eventually merge together as they represented the interests of property and capital. In Victorian England, this type of class structure was already in evidence, especially in the industrial towns. But it was also clearly evident in the countryside, where the advantageous conditions for arable farming in the third quarter of the nineteenth century had encouraged the formation of a tripartite class structure of landowners, tenant farmers and landless agricultural labourers. It is thus not surprising that Marx should have been struck by the apparent symmetry of industrial and agrarian capitalism, and tempted into viewing contemporary rural England as the prototype of the capitalist penetration of agriculture which would eventually be generalized throughout Europe. However, far from being the model for a universal process, British agrarian capitalism in its tripartite form has proved to be unique, in essence because it was only in Great Britain (and lowland England at that) that the indigenous peasantry was abolished before industrialization. As H. Newby has pointed out:

Britain and its white-settler colonies (Canada, Australia, New Zealand and—for these purposes—the United States) are distinguished by the very absence of a peasantry, whereas in virtually every other country in the world the peasantry has survived the onslaught of subsequent industrialization. The value of the 'English model' of agrarian development is therefore limited in the extreme. *It is the persistence, not the disappearance, of the peasantry which has turned out to be the most distinctive feature of agricultural capitalism* [My emphasis].<sup>10</sup>

If Marx was led up a theoretical blind alley by the historical particularity of the British version

of agrarian capitalism, it is not perhaps surprising that he committed a similar error with his treatment of the peasantry. Marx's analysis of the peasantry relies on a small range of historical sources: principally the winegrowers of the Moselle and Rhine in his native Germany, and the French peasantry of the 1840s and 1850s. As a young journalist he wrote at length on the hardships experienced by the former, and his commentary on the political role of the latter in 'The Eighteenth Brumaire of Louis Bonaparte' was written only a few years later, in 1851. In characterizing the French peasantry as 'a vast mass [whose] members live in similar conditions but without entering into manifold relations with one another', Marx was led into a way of conceptualizing peasant social structures as merely anomalous social formations whose rationale had disappeared with the demise of the feudal mode of production. His treatment of the peasantry is rather one-dimensional and gives the impression that he almost shared the prevailing bourgeois view of peasants as a backward, ignorant, superstitious and savage race—indeed, a race apart from the townspeople:

Their field of production, the small holding, admits of no division of labour in its cultivation, no application of science and therefore no diversity of development, no variety of talent, no wealth of social relationships. Each individual peasant family is almost self-sufficient; it itself directly produces the major part of its consumption and thus acquires its means of life more through exchange with nature than in intercourse with society. A small holding, a peasant and his family; alongside them another small holding, another peasant and another family.

A few score of these make up a village, and a few score of villages make up a Department. In this way the great mass of the French nation is formed by simple addition of homologous magnitudes, much as potatoes in a sack form a sack of potatoes. In so far as millions of families live under economic conditions of existence that separate their mode of life, their interests and their culture from those of the other classes and put them in hostile opposition to the latter, they form a class. They are consequently incapable of enforcing their class interests in their own name, whether through a parliament or through a convention. They cannot represent themselves, they must be represented.<sup>11</sup>

It is important to recognize that Marx's conceptualization of the peasantry constituted the other side of the coin to his model of agrarian



capitalism. For Marx, movement towards the tripartite system is only possible through the concentration of land in the hands of a smaller and smaller number of landowners, and the consequent dispossession and proletarianization of peasant farmers. His writings clearly recognize a contradiction between the emergence and rapid expansion of industrial capitalism, and the evolution of a system of land-ownership whose origins were pre-capitalist. Capitalist society merely introduced new forms of expropriation of the surplus produced by the peasant family: taxes and money rents replaced feudal dues.

In effect, the new forms of surplus appropriation created by capitalism meant that peasant producers had no obvious place within it. In this sense the peasant production unit shared the same eventual fate of all other small-scale enterprises, since it would be wiped out by competition from large enterprises in which the concentration of capital and labour enabled production to be carried out at much lower cost than would be possible in the peasant farm. The only future could be that of 'dissolution of private property based on the labour of its owner', for the 'production of capital and wage workers is ... the major product of the process by which capital turns itself into value'.

Marx could not see why the French peasantry, and thus all others opened up to the full force of capitalism, should not be subject to the same panoply of technical changes which had dealt such a fatal blow to the English peasantry. He saw enclosure and the 'agricultural revolution' as technological improvements little different from those accomplished in industrial production; by increasing agricultural productivity they had wiped out the small peasant farmer in the same way as factory production had wiped out the hand-loom weaver. As Marx expressed it in a letter to Vera Zassoulitch: 'all the countries of Western Europe will follow the same path as England'.

Engels expressed Marx's pessimism about the future of the peasantry even more strongly, in a way which interestingly foreshadows modern work: in his study of the 'Peasant Questions in France and Germany' we find him pointing to the fact that the peasant is 'a survival of a past mode of production' who is doomed to become a proletarian. In part this is

because of the peasant's incorporation in an economy: he becomes increasingly dependent upon capital goods produced industrially, while at the same time unable to satisfy his own subsistence needs. Such a situation produces increasing indebtedness, which compromises the apparent independence conferred upon him by his possession of the means of production. Only pauperization could result from such a situation of increasing indebtedness and improvements in agricultural technology.

It must be evident that in countries like France, Germany and Italy Marx's predictions of a declining peasantry have been proved to be at least partially correct—that increasing indebtedness, technological change and relative pauperization have indeed taken their toll of the peasant population. But it must be equally clear that rather than being pushed out of agriculture, the pull from the expanding urban and industrial sectors has been more important in draining the agricultural workforces from the erstwhile rural populations.

As an alternative to Marx's paradigm of agrarian transition, the work of Karl Kautsky is instructive in that it shows how Marx's hypotheses were falsified by the German peasantry. Kautsky's position was that Marx's progressive model is correct in its isolation of the general tendencies involved in the capitalist mode of production, but that it is unable to identify those special factors which would prevent it from conforming to the model in particular socio-historical contexts. Agriculture—and especially peasant or family-labour farms—represents one of these special factors.<sup>12</sup> Because agriculture possesses these special characteristics (one of the most important being its dependence on a form of capital—land—that is non-reproducible) it exhibits a set of special laws of capitalist development, which may be clearly differentiated from those of industry.

While capitalism develops along distinct lines in agriculture it does however share certain general features of the development of industrial capitalism. These include the continuing extension of capitalist production, a certain degree of proletarianization of the agricultural labour force, and the concentration of property in the means of production. However, these similarities in the effect of capitalist development should not obscure the fact that



A small farmer in Périgord, France. Cartier-Bresson/Magnum.

their structure is quite different. The extension of capitalism does not so much involve an increase in the area farmed by capitalist farms, as an extension of the organizational system under which capital is appropriated—or in other words the vertical and horizontal integration of capitalist farms into food processing and agribusiness. Even in 1899, he gave as an example of such a process the development of Nestlé!

Proletarianization also has a special meaning for Kautsky, for it implies the pauperization and loss of liberty of small peasants, their subjection to the interests of agribusinesses rather than an actual change in the relations of production. Such a process also involved the differentiation of the peasant household, as peasants find it necessary to supplement their inadequate land resources by selling their labour rather than agricultural commodities in order to provide a monetary income—to ensure family survival. The proletarianization process therefore creates worker-peasants or 'part-time

farmers' rather than leading to the disappearance of the non-capitalist petty-commodity producer. Indeed, Kautsky argues that the persistence of the small peasant farm is not a consequence of any superior productivity on its part, but a result of its ceasing to be in competition with the large capitalist farm, and its usefulness as a source of manpower for the latter.<sup>13</sup> In fact, the complementarity of capitalist and peasant farms, which extends even to a specialization by the latter in certain labour-intensive crops which are not a viable proposition for the capitalist enterprise, is a result of the absence of the direct market competition which Marx's model identifies as the main cause of the disappearance of peasant farms.

Furthermore, Kautsky's analysis of the process of concentration in capitalist agriculture emphasizes that this does not necessarily mean the creation of very large farm units in place of small peasant farms. The latter are undoubtedly affected by a concentration of landownership due to their own increasing

indebtedness. But this means that they are more and more reliant upon loans and mortgages, so that de facto control of their land passes into the hands of finance capital rather than creating a widespread consolidation of small farms into larger farms. In addition, Kautsky was sceptical of the apparent technical superiority of large farms: Marx had assumed (like the Physiocrats) that large capitalist farms were automatically more efficient, inasmuch as large factories were more efficient than small factories. But as Kautsky points out, the economies of scale apparent in industrial production are not simply transferable to agricultural production:<sup>14</sup> 'The expansion of a given enterprise . . . amounts to a mere extension of the area under cultivation, and thus entails a greater loss of material, a greater deployment of effort, resources, time.'<sup>15</sup> Thus the main effect of Kautsky's model of agrarian transition is to stress the delayed and complex process by which capitalism penetrates agriculture, rather than to posit an alternative to Marx's paradigm itself. Kautsky believed in the ultimate correctness of the Marxian analysis, but he recognized that a complex differentiation of the rural social structure would occur before the logic of capitalism worked itself out. Within this complex differentiation the peasantry would find itself with a variety of niches which allowed them to retain non-capitalist production units within a predominantly capitalist society. It is tempting to see the peasantry of many Third World societies as caught within this long-term transitional phase—their farms enduring because of their relative complementarity to plantations and latifundia and because of the pluri-activity of a considerable proportion of their labour force.

But it is not just in the Third World that a differentiated rural social structure of the type posited by Kautsky can be seen to persist. In 'advanced' capitalist societies such as France, Italy, Spain and even the Federal Republic of Germany or the Netherlands, agricultural work is quite clearly divided into two main types: that carried out on a relatively small number of large capitalist farms which tend to be devoted to the production of commodities where scale economies are significant or more expensive capital equipment is required; and that carried out on a large number of small- and medium-

sized family-labour or 'peasant' farms involving a small number of family workers with the occasional hired worker. More frequently today, the head of household has an urban, industrial job as well as his farming activity, and a large responsibility for farm work therefore devolves on his wife and children. These latter 'peasant' or family farms may specialize in certain commodities such as fruit, vegetables, free-range livestock and, in many cases, milk production, which they can produce at lower cost (and higher quality) than capitalist farms. The propensity of peasant farmers to exploit their own and their family's labour for small returns, the other side of the coin to the peasant mentality of penny-pinching and greed so often portrayed in folk-tales, enables their economic niche to be relatively secure despite competition from capitalist farms.

Kautsky's analysis is important because it so aptly describes the dualism involved in European agriculture, and in the policies of both national governments and the EEC. Both have veered between the aim of developing a modernized, efficient, capitalist farm sector, and the requirement of providing income and resources to a small-farm or 'peasant' sector. Since the latter is most often to be found in the poorest regions, agricultural policies and economic development policies have, in a number of cases, become interdependent.

In Portugal, for example, agricultural development policies of the period 1954–74 were unable to increase the output of food sufficiently to feed a growing urban population or to raise farm incomes, because of major structural and institutional handicaps, particularly the fragmentation of land tenure and the dominance of latifundia in the southern region, together with low educational levels among the farming population, which comprised a very high proportion of elderly farmers. Portugal is only about 45 per cent self-sufficient in food-stuffs: the agricultural deficit in 1981 amounted to about 4.5 per cent of GDP, despite the fact that 30 per cent of the active population are engaged in farming. The average output of cereals, for example, is 907 kg/ha—the lowest in Europe—against a European mean of 3,404 kg/ha. In some rural areas, the primary source of income is not agriculture, but transfers from relatives who left the countryside ten

to twenty years previously. Since 1974, rural development policies have concentrated on a land reform in the latifundia region of large capitalist farms which maintained farm structures while changing landownership, while the peasant-farmer minifundia regions of the north and centre are gradually incorporated within a developing market economy through rural development programmes designed to improve infrastructures, consolidate landholdings, and provide an adequate financial framework. But in so far as Portuguese food security is concerned, the small-farm sector represents the key to self-sufficiency, since the large capitalist farms concentrate on major export crops such as wine and cork.<sup>16</sup>

Italy, despite its agricultural potential, reflects many of the problems of a dualistic agricultural policy, in which farming and economic development objectives have become interdependent. It is in heavy deficit on agricultural products, especially meat and livestock, and the total deficit for 1979 was equivalent to 2.9 per cent of GNP (the fifth largest deficit by volume in the world). This is paradoxical in that Italy is a major world producer of certain food products (olives, grapes, wine, fruit and certain vegetables). Many of the food-production problems are associated with the dependent development of the southern Mezzogiorno regions of Italy.

Recent trends in agricultural development in the Mezzogiorno have accentuated regional and inter-regional differences in agricultural performance. The profound differences stem from the basically divergent development of production structures; capitalist enterprises have expanded in those regions favoured by structural or geographic factors, while small peasant holdings continue to predominate in less favoured, less developed regions. Initially the promotion of small peasant farms, major public investment in land reclamation and irrigation, and technical advances had a positive effect and resulted in an increase in gross product. In fact this expansion of the late 1960s was greater in the Mezzogiorno than in the rest of Italy. Subsequently, there were structural problems and low productivity in hill and mountain areas and, more recently, problems with marketing produce from the more successful farms situated in valleys and on the coastal

plains, which resulted in an overall decline in the agricultural sector in the 1970s. The extent of this slump is clear from the changes in total agricultural value added and the agricultural value added per worker (see Tables 4 and 5).

TABLE 4. Italy—annual rate of change of total agricultural value added (percentages)

|                | 1959-61<br>to 1964-66 | 1964-66<br>to 1969-71 | 1969-71<br>to 1976-78 |
|----------------|-----------------------|-----------------------|-----------------------|
| Mezzogiorno    | 2.85                  | 3.76                  | -0.45                 |
| Central Italy  | 0.53                  | 1.57                  | 0.60                  |
| Northern Italy | 1.49                  | -0.06                 | 0.82                  |
| All Italy      | 2.84                  | 1.72                  | 0.26                  |

The early high annual rate of change of total agricultural value added per worker in the Mezzogiorno was partly attributable to the exodus of labour from the agricultural sector, which decreased the denominator of the ratio. The annual rate of change fell sharply from 1969, despite the continued outflow of labour. In addition, regional disparities within the Mezzogiorno worsened from 1965 to 1977, with the agricultural value added per worker in the poorer regions such as Basilicata and Molise often less than 30 per cent of that of more advanced regions. The current plight of agriculture in the Mezzogiorno stems from both internal and external forces, domestic policies and the Common Agricultural Policy.

TABLE 5. Italy—annual rate of change of total agricultural value added per worker (percentages)

|                | 1959-61<br>to 1964-66 | 1964-66<br>to 1969-71 | 1969-71<br>to 1976-78 |
|----------------|-----------------------|-----------------------|-----------------------|
| Mezzogiorno    | 7.85                  | 7.95                  | 1.13                  |
| Central Italy  | 9.43                  | 8.17                  | 5.45                  |
| Northern Italy | 7.8                   | 7.00                  | 4.7                   |
| All Italy      | 8.06                  | 7.33                  | 3.09                  |

Source: M. Benedictus, 'Agricultural Development in Italy: National Problems in a Community Framework', *Journal of Agricultural Economics*, Vol. 32, No. 3, 1981, pp. 275-86.

Domestic policy in the Mezzogiorno was, for a variety of reasons, pervaded with an unshakeable belief in small family farms. The major policy initiative in the agricultural sector, the land reform of the 1950s, created a substantial number of small family farms at considerable cost, only to see them almost immediately

rendered economically unviable by changes in the economic structure of the region and by changes to European agriculture in general, due to the CAP. At the time of the land reform it was neither practical nor desirable to create farms of significantly greater size. The reform, though well intentioned, was quickly and dramatically overwhelmed by events. However, little attempt was made to adapt the reform programme to the changing circumstances or to remedy the situation later on. Little was done to increase farm size to ensure that the industry remained competitive in changing times. Emigration relieved pressure from rural areas and the state was content to resort passively to the 'safety-valve' of emigration.

It is arguable that government policy failed to capitalize even on the opportunities created by mass emigration for some restructuring of agriculture. Many emigrants abandoned the land when they sought employment in the industrial north, but held on to it as security against subsequent redundancy and inflation. 'Split-family' emigration saw the most productive and enterprising of the agricultural labour force leave the farms to the very old and to women—those least able to carry out an innovative restructuring of the industry. In addition, remittances from workers abroad were not spent on agricultural improvement but more often served a welfare function to supplement subsistence farming or were invested in additional small lots, not in productivity or restructuring. The EEC introduced an early-retirement scheme whereby the small farmer was offered incentives to retire prematurely and sell or rent his land to other farmers engaged in modernization programmes or withdraw it from use. No attempt was made to encourage landowners to sell land to create viable units, nor was there any attempt to penalize those owners who no longer cultivated their land and had emigrated permanently.

As Calcaterra has pointed out, the question of farm size was not just one of peasant family farming or large-scale output on an agro-industrial basis.<sup>17</sup> Much more could have been done to overcome the inefficient aspects of peasant farming and to promote co-operative efforts to harvest the inherent potential existing within the peasant system. On the contrary, government policy continued to provide in-

centives and grants to farms which would always remain sub-marginal. The situation has changed in recent times and domestic policy now aims at reducing population in those areas of uplands where the only real potential lies in forestry, pastoralism and mechanical cereal farming. However, small-holding size continues to be a major factor exacerbating the regional problem of low agricultural productivity.

A study by D. Lane in Alta Val d'Agri, Basilicata, highlighted the magnitude of the problem.<sup>18</sup> In that area 80 per cent of the farming units were less than one hectare in size as a result of inheritance laws. The small uneconomic plots of vineyards were not suitable for mechanization, and a substantial proportion of the young and fit inhabitants had moved to find work in Milan, Turin, the Federal Republic of Germany and Switzerland. The labour that remained was far from conscientious, in that it consisted chiefly of day labour with no direct stake in the results of the enterprise. Widespread emigration meant that many plots fell into disuse and were abandoned. Family farms became increasingly oriented towards self-sufficiency and moved away from production for the market. Those goods that were purchased frequently depended upon remittances from migrant workers and welfare payments. The valley possessed the potential to accommodate three times as much livestock as it had, with pasture improvement and structural reform. The existing low-intensity farming provided low incomes and consequently little possibility for capital growth and reinvestment. In fact a more widespread occurrence was that the high rate of inflation resulted in sharp increases in land values and rendered the enlargement of farms even more difficult. As land values increased and productive investment decreased the structure of production effectively ossified, creating both unemployment and underpayment of labour.<sup>19</sup>

The existence and persistence—it could even be argued, the reproduction—of a peasant farming sector in the societies of Western Europe (with the United Kingdom, as ever, an exception) may seem anachronistic, viewed from either a Marxist or non-Marxist viewpoint. However, such a sector of small farmers may indeed represent a necessary aspect of capitalist development; according to Vergopoulos, who

sees in the persistence or even expansion of the peasant sector evidence of no more than a 'deformed capitalism'. Discussing the prevalence of family farming in Greece and other countries of southern and eastern Europe, he argues that such a form of agriculture, though based on the family,

is nevertheless capitalist; it is within the family form of production that, in the domain of agriculture, the contemporary movement of capitalism manifests itself. It is indeed this inequality, this non-correspondence between urban and rural social forms (which are nevertheless integral parts of the same social body and of the same unitary movement of capital) which I have called 'deformed capitalism'.<sup>20</sup>

Indeed, far from being a curious pre-capitalist survival destined to disappear, peasant family farming in fact constitutes a 'necessary mechanism' for the accumulation of urban capital and the development of capitalism (a position not far from that of Kautsky, it should be noted). The deformity of capitalism involved in this process, thus results from the fact that peasants typically over-exploit their own labour in order to receive an income from their sale of agricultural products at about the same level as wage workers. Normally they are not able to realize either a ground rent from their land or an entrepreneur's profit. As a result, the profit and rent forgone represent 'positive gains' for the urban economy—effectively a transfer of resources. It is in this light that Amin and Vergopoulos make the case that

family farming is the most successful form of production for putting the maximum volume of surplus peasant labour at the disposal of urban capitalism. It also constitutes the most efficient way of restraining the prices of agricultural products.<sup>21</sup>

It is clear from a number of individual studies that the cumulative effects of national policies and international agreements (e.g. the EEC's CAP) have been to marginalize the small farmer, either hastening his departure from the agricultural sector, or reducing him to a semi-professional status (either as part-time farmer or as a near-subsistence-level producer of low-yield commodities). Entry to the farming 'profession' has been made very difficult by the incorporation of agricultural organizations within the state, and the consequent 'direction'

of farm production policy by an amalgam of bureaucrats and farmers' political representatives. This process has taken different forms in a number of European societies, but its general outlines are discernible in all. In such a situation, the small farmer has few choices: he may attempt to become 'safely' incorporated in professional farming, for example through contract farming (dairy products, pig meat, fruit, vegetables) in which case he risks becoming little more than a wage worker: he may choose to remain 'marginal'—and thus have no access to grants, credit, advisory facilities, etc., which are gained by incorporation in 'professional' agriculture—or he may be forced out of farming altogether, in order to seek better-paid work in a factory or the service industries.<sup>22</sup>

Most commentators would now recognize that the main EEC directives on farm structural measures (EEC 72/159; 72/160 and 72/161), though intended to help smaller farmers in Europe, have had very limited results by comparison with the price-support elements of the CAP. In short, structural policies of the Common Agricultural Policy are having little or no impact on the structural problems of farming. Since less than 5 per cent of the budget of FEOGA (the EEC's fund for agricultural expenditure) is expended on such measures, such a conclusion may not be surprising. Clearly the problem is not created by the policy itself, but by the limited resources placed at its disposal by the European Commission and the member states. The view that the CAP is a mechanism for managing the decline in the agricultural labour force may be presented to balance this conclusion. But if that had been its main objective, the management has been neither consistent nor effective, as an EEC 'stock-taking' of the CAP in 1977 makes clear:

Although the CAP was based on the four pillars of market support, social measures, structural reform and commercial policy, the market side has predominated. This has led to a distortion in that only some of the farms have been assured adequate incomes and as a result the run-down in employment in the industry has proceeded at a chaotic pace. This distortion has been aggravated by the fact that the development of the CAP has not been accompanied by appropriate development of regional and social policy at Community level. The mix of production factors in agriculture has improved as a result of the run-down of labour, with more emphasis being placed on the factor land and less on the factor

labour. The departure from agriculture of farmers and family labour (above all the young) has been decisively influenced by the rigidity of production structures in the industry. Though, unfortunately, no investigations have been carried out into this at EEC level, it is probable that most of the 1.5 million farmers estimated to have left farming between 1960 and 1974 had small or very small farms. The same possibly applies also to the more than 4 million family workers who left the land, during that period.<sup>23</sup>

## Conclusions

The nature of agricultural work has changed dramatically in most industrial societies over the last fifty years or so. It is now carried out by a very much smaller number of people, and the Western European countries in particular have witnessed their villages—which were once the centres of occupational communities of great diversity—in some cases emptied of all but a few remaining farmers and agricultural workers. Despite the fact that the basic resources of agriculture remain the same (i.e. land and climate), the application of science and technology has fundamentally changed the sort of work that is done.

The emphasis of agricultural policy in Western Europe on increasing food production by creating larger and more intensive farm units has created food surpluses for certain products, and marginalized small and poorer farmers. The social effects of such policies have been considerable for many of the more dispersed rural areas, which relied for their local community and its infrastructure on a numerous farming population—a large number of small producers, with roughly similar sized farming units or at least a limited range of farm sizes. Structural policies to redress the imbalances caused by other agricultural policies in regions affected by population loss have been limited, and in some cases have introduced further distortions in the food production system. For example, headage payments for cattle raised in the uplands of England and Wales under the EECs Less Favoured Areas Directive 72/159, have encouraged the production of fatstock on land suitable only for raising leanstock: the grants have allowed farmers to purchase concentrates to supplement grass, but they have also accelerated the consolidation of farm units,

and by increasing stocking levels, they have had detrimental effects on the ecology of upland regions.

In general terms, the disappearance of small farmers from many rural regions of Western Europe has caused serious ecological, environmental and structural damage to the rural landscape. Large, intensive and mechanized farm units are capable of changing the landscape very rapidly, and the introduction of monocultures and their attendant chemical sprays and treatments rapidly reduces the floristic and faunistic diversity of an area. Small-scale polyculture generates more diversity of landscape and encourages a wider range of flora and fauna to establish habitats. At the same time, abandonment of marginal land previously utilized by small farmers encourages the formation of scrub and gorse, or generates soil erosion when terracing and irrigation are discontinued.

Despite many predictions—from Marx onwards—that agriculture would become a form of capitalist production indistinguishable in character from any other form, agriculture in Western Europe has remained obstinately singular in its reliance upon relatively small businesses run by family labour. Indeed, where conscious attempts have been made to fulfil Marx's predictions—as in the socialist states of Eastern Europe—the creation of large capital-intensive 'factory' farms has proved relatively unsuccessful.

The agricultural economist Alan Harrison has suggested that the small family farm, when considered in broad social terms, has much to offer modern society by comparison with the large capitalist unit. The latter is predominantly justified on relatively narrow efficiency and factor-use grounds, which take little notice of social or environmental needs. The case for the small family farm rests on four basic claims:

First (it is argued), smaller farms absorb economic misfortune within their own ranks as it were, while larger ones (like their industrial counterparts) tend to pass it on to the remaining members of society. Cyclical movements within the industry lead to redundancies of labour and to capital withdrawal; supply interruptions become more disruptive. Second, smaller farms result directly in a larger rural population so bringing about a more efficient use of social capital and rural infrastructure. Third, smaller farms are less likely to produce,

collectively, a monocultural pattern of farming, and are more likely, therefore, to produce an aesthetically pleasing landscape and an environmentally less polluting industry. Fourth, smaller farms stimulate initiative, independence and innovation and contribute to the

wider sharing of property ownership. Larger farms tend to frustrate these things although it is argued, on their behalf, that they provide an employment outlet with a built-in career structure for the more able.<sup>24</sup>

## Notes

1. By the term 'Western Europe' I mean primarily the countries of the European Community: Belgium, Denmark, the Federal Republic of Germany, France, Greece, Ireland, Italy, Luxembourg, the Netherlands and the United Kingdom, plus Spain and Portugal, which will become members of the EEC on 1 January 1986.

2. See, for France, Pierre Merlín, *L'exode rural*, Paris, 1971; and for Italy, U. Di Giorgi and R. Moscati, 'Migration as a Matter of Policy: The Case of Italy's Mezzogiorno', *CERES*, Vol. 13, No. 5, 1980, pp. 25-30. These are only two examples of the genre.

3. I am using the term 'corporatist' here in its recent sociological meaning, as a way of describing the delegation by state organizations of administrative authority to professional groups to control and administer the activities of their members. The close relationships in most European states between farmers' organizations and ministries of agriculture, whereby the former play an important role in developing and administering the policies of the latter, are a clear example of corporatism.

4. See, for an interesting discussion of various aspects of this point, H. Nallet and C. Servolin, *Le paysan et la loi*, Paris, INRA, 1980 and C. Grignon, *La professionnalisation de la paysannerie*, Paris, INRA, 1982, which both deal with the situation in France.

5. See C. Servolin, 'Small is Beautiful', *Libération* (Paris), 23 June 1980, pp. 20-1.

6. T. Beresford, *We Plough the Fields*, pp. 76-7, Harmondsworth, Penguin, 1975.

7. CEC, *The Regions of Europe*, Ch. 4, sections 4.1-2, 1981. (COM(80)816.)

8. B. McNamara, *Recent and Foreseeable Trends in Rural Areas*, p. 21, Paris, OECD, 1981.

9. The poorest regions in the EEC include the Mezzogiorno in Italy, west, central and south-west France, Ireland, Northern Ireland and all Greece outside Athens (see CEC, op. cit.). All are predominantly rural.

10. H. Newby, 'European Social Theory and the Agrarian Question:

Towards Sociology of Agriculture', p. 15, paper presented to RESSG Franco-British Colloquium, Trinity College, Oxford, 1982.

11. K. Marx, 'The Eighteenth Brumaire of Louis Bonaparte', *Selected Works*, Vol. 1, p. 334, Moscow, Foreign Languages Publishing House, 1962.

12. K. Kautsky, *La question agraire*, p. 423, Paris, Giard & Brière, 1900.

13. *Ibid.*, p. 155.

14. It can be argued that only in certain types of farming can scale economies be exploited, e.g. intensive livestock production such as poultry and pigs.

15. It should be stressed, however, that Kautsky was writing before the development of a highly mechanized farming which would permit large farms to be cultivated more efficiently than small.

16. See, on Portuguese agriculture: World Bank, *Portugal Agricultural Sector Survey*, Washington, D.C., IBRD, 1978; A. S. Lopes, *Desenvolvimento Regional*, Lisbon,



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- Fundação Gulbenkian, 1979; A. M. Cunha, *A Note on the Portuguese Experience*, Paris, OECD, 1981.
17. E. Calcaterra, 'Un quadriofovia senza speranza', *Mondo Economico*, Vol. 33, No. 1, 1978, pp. 40-3.
18. D. Lane, 'Mini-farming in the Italian South', *Geographical Magazine*, Vol. 53, No. 3, 1980, pp. 177-9.
19. P. Carrer, 'Decadenze e rinascita della proprietà fondiaria', *Rivista di politica agraria*, Vol. 28, No. 3, 1981, pp. 13-25.
20. K. Vergopoulos, 'Capitalism and Peasant Productivity', *Journal of Peasant Studies*, Vol. 5, No. 4, 1978, p. 447.
21. S. Amin and K. Vergopoulos, *La question paysanne et le capitalisme*, Paris, Anthropos, 1977.
22. Among the many studies concerned with this theme, we will cite only a representative group: P. Evrard, et al., *Petite agriculture et capitalisme*, Paris. INRA, 1977;
- Grignon, op. cit., S. H. Franklin, *The European Peasantry*, London, George Allen & Unwin, 1969.
23. EEC, *Study of the Economic and Social Committee on the Employment Situation and Employment Prospects in Agriculture*, Brussels, EEC, 1977.
24. A. Harrison, 'Family Farm Policies in the European Community: Are they Appropriate for the U.K.', in R. B. Tranter (ed.), *Strategies for Family-worked Farms in the U.K.*, pp. 56-67, December 1983. (CAS paper 15.)
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# The problems of developing the agro-industrial system in the USSR

V. A. Martynov

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The policy for developing the agro-industrial system of the USSR in the 1980s and the policy's basic directions and principal characteristics were laid down by the Food Programme of the USSR adopted in May 1982, which remains to this day the most important component of the economic strategy of the USSR in the long term. This programme is aimed at providing the population of the country with a reliable supply of foodstuffs.

It provides for important changes in agricultural policy and in the whole method of managing the country's agricultural and agro-industrial system. It also provides for radical measures for improving the economic machinery and for strengthening the economy of collective and state farms. Under this programme, greater material incentives for increased production are being offered to workers in agriculture and the whole agro-industrial system, large-scale measures are being implemented for improving the housing, public service and socio-cultural facilities of the rural population, and managers and specialists are working on the further consolidation of collective and state farms.

Implementation of the Food Programme will enable the Soviet Union to improve its position substantially in world agricultural and food production, to increase its export potential and to expand its co-operation with other

countries, in regard both to agriculture and other areas of the agro-industrial system.

Despite the many caprices of the weather gross agricultural production increased, at comparable prices, from an average of 82,800 million roubles per annum between 1961 and 1965 (the seventh Five Year Plan) to 123,900 million roubles in 1976-80, and to 127,800 million roubles in 1981-83, i.e. by 63 per cent as compared with the seventh Five Year Plan. The average annual volume of grain production grew from 130.3 million tonnes in 1961-65 to 205 million tonnes in 1976-80, or by 57 per cent. Average annual meat production (dressed weight) increased from 9.3 million tonnes under the seventh Five Year Plan to 15.7 million tonnes in 1981-83, milk production went up from 64.7 million to 92.1 million tonnes, eggs from 28,700 million to 72,800 million, vegetables from 16.9 million to 28.7 million tonnes, and fruit, berries and grapes from 6.5 million to 18 million tonnes.

Between 1965 and 1983, consumption of meat and meat products per head increased by 42.4 per cent and reached 58.4 kg, milk and dairy products by 23.1 per cent (309 kg), vegetables by 40.2 per cent (101 kg) and consumption of eggs doubled (253 eggs).<sup>1</sup> There was a constant supply of bread, bakery products, pasta and sugar to the population in all parts. In calorific value, the diet of the

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population of the USSR corresponds to physiological norms and according to FAO data is one of the highest in the world.<sup>2</sup>

However, the food problem in the USSR is still very much on the agenda. The structure of nutrition requires improvement, and demand for meat and dairy products is not fully satisfied.

The recorded growth in food production has proved insufficient to satisfy the population's demand. On the one hand, this can be explained by a rapid growth in the money income of the population (the average real wage of manual, office and professional workers in the USSR increased by 1.9 times between 1965 and 1983, and real per capita income doubled if one includes payments and benefits received by the population from social consumption funds; the real incomes of collective farm workers increased correspondingly by 2.2 and 2.3 times). On the other hand, state retail prices for basic foodstuffs remained stable and low (as compared with the industrially developed countries). The latter circumstance in particular explains the seemingly paradoxical fact that in recent years, there has been a sharp increase in purchases of foodstuffs in the state network by the rural population.

The nub of the food problem in the Soviet Union can be illustrated in brief by taking the example of meat. The present level of production provides 58.4 kg of meat per capita to the trading network, but the level of money income of the Soviet population creates a demand calculated as roughly 75 kg. Thus in practice, production has proved insufficient to satisfy in full the growing demands of the population, resulting from the social policy followed in the USSR of raising incomes and increasing the general well-being of the population.

By the beginning of the 1980s adverse features had appeared in the development of the agro-industrial system and its individual branches, such as the reduced effectiveness of investment, the low growth of productivity, certain structural imbalances, and shortcomings in management and planning, leading in particular to losses which had a serious effect on food production in the country.

The Food Programme sets the target of supplying all kinds of food to the population as rapidly as possible, of making substantial improvements in the composition of the diet,

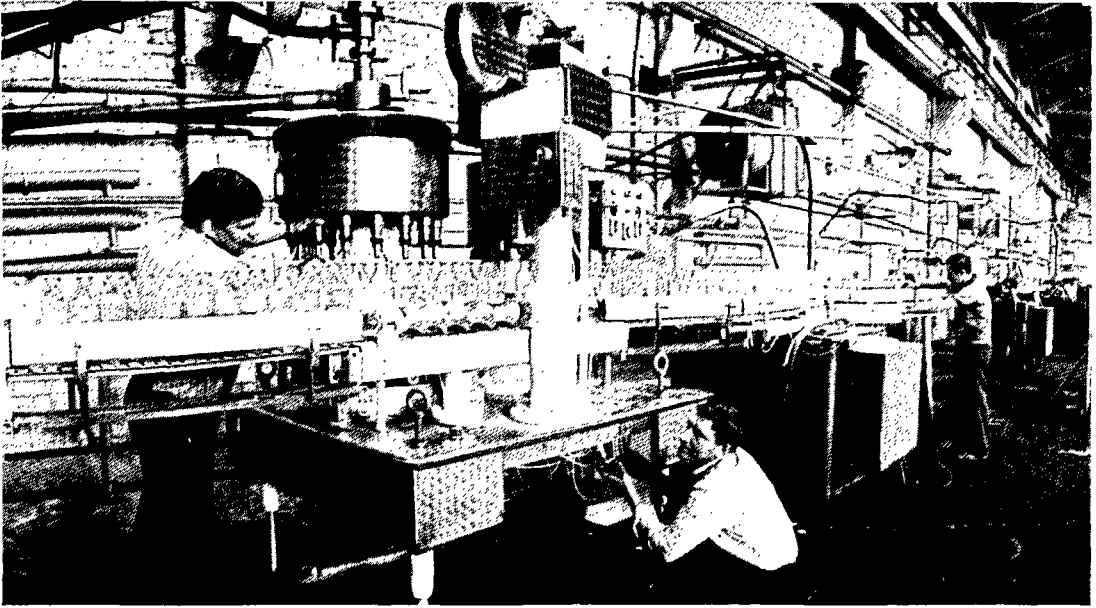
especially by meeting in full the demand for such products as groats, confectionery, margarine, poultry and fish, and of improving the supply of meat, milk, vegetable oil, fruit and vegetables.

By 1990, it is planned to increase per capita consumption as follows: meat by over 20 per cent (up to 70 kg), vegetables and melons, pumpkins, etc., by 30–39 per cent (up to 126–135 kg), fruit and berries by 74–84 per cent (up to 66–70 kg). This will require fast rates of increase in the production of the most valuable agricultural produce. Thus, the average annual yield under the twelfth Five Year Plan (1985–90) should be 250–255 million tonnes of grain (an increase of 45–50 million tonnes as compared with the eleventh Five Year Plan); 20–20.5 million tonnes of meat (a growth of 5.2–5.7 million tonnes); 104–106 million tonnes of milk (a growth of 11.3–13.3 million tonnes); up to 37–39 million tonnes of vegetables and melons, pumpkins, etc. (a growth of 7–9 million tonnes); and up to 14–15 million tonnes of fruit and berries (a growth of 4.6–5.6 million tonnes).<sup>3</sup>

The Soviet Food Programme for the period up to 1990 is a major new step in the improvement of planning in the USSR. Based on scientifically established qualitative correlations that have been tested in practice, planning in these new circumstances has to make provision for the proportionate and balanced development of the country's whole agro-industrial system and for a significant improvement in its structure. A model for the development of the agro-industrial system has been worked out, embracing sixty branches and sub-branches of the economy.

The programme is a comprehensive one. It covers not only all the basic units of the agro-industrial system, but also provides for an overall approach to its development, taking into account requirements for the development of the material and technical infrastructure, organization and management as well as socio-economic factors.

For the first time, the agro-industrial system is being singled out as an independent object of planning and management, and this is something which will contribute to a better combination of territorial, branch and purpose-programmed planning. The whole mechanism



Soviet agro-industry: automated line for milk bottling, Melitopol, Ukrainian SSR. APN.

for planning the development of the country's agro-industrial system will be directed towards the co-ordination and balanced development of the system's different parts, and of the product subsystems, individual branches and sub-branches and towards the optimization of the balance within branches. It will be directed towards achieving correspondence between the internal structure of the system and its various parts on the one hand and the purposes for which the agro-industrial system operates on the other. This will make it possible not only to maximize raw agricultural output but also to increase the output of finished products and obtain greater effectiveness from all the resources used by the agro-industrial system.

It should be observed that over the last ten to fifteen years, the branches of the agro-industrial system have developed at different rates, and industrialization and concentration of production have been achieved in only some of its stages. As a result, the system's production structure is still far from rational. The role of the individual parts of the agro-industrial system in turning out the finished product has been determined without the necessary scientific foundation. Each branch has devel-

oped its services on the spot without liaison with other branches. This has resulted in imbalances. Facilities for the storage and processing of produce failed to keep pace, and losses of produce increased at all stages of its transfer from field and farm to the consumer. (For example, on average, the growth rate of capital investment in the basic branches of the agro-industrial system amounted to 30.2 per cent in 1976-80 as compared with 1971-75, and 32 per cent for all agricultural operations together, but the rate was only 2 per cent in the food industry, 9.6 per cent in the meat and dairy industry, and 13.6 per cent in the milling and animal concentrates industry. The lack of any principle of balance in the planning of the branches of the agro-industrial system and lack of communication between them reduced the effectiveness of investment and was not conducive to cutting losses of produce.)

The investment policy of the Food Programme provides for an integrated approach to the solution of these problems, the elimination of imbalances in the material and technical infrastructure and technology of agriculture and its associated branches. Under just the eleventh Five Year Plan (1981-85), investment in the

material and technical infrastructure of the agro-industrial system will reach 233,000 million roubles, including 189,600 million roubles for agriculture. In the next Five Year Plan (1986-90), 33-35 per cent of the aggregate investment in the whole of the economy<sup>4</sup> will be directed towards the development of the branches of the agro-industrial system (including 27-28 per cent to agriculture). In 1981-83, 140,600 million roubles were invested in the development of the country's agro-industrial system, including 106,800 million roubles for the development of the whole range of agricultural operations.

Investment in agriculture is concentrated on increasing soil fertility, on creating a steady supply of animal feed and facilities for the primary processing of production and on the building of warehouses and stores. It is also concentrated on the social development of country areas.

Soviet agriculture is large-scale socialist production. At the end of 1983 it included 26,000 collective farms (production co-operatives), 22,300 state farms (state enterprises) and 9,900 inter-farm enterprises and organizations (shared participation by collective and state farms). The scale of these farms and enterprises is impressive: on average each collective farm has 3,900 hectares of arable land, and each state farm 5,440 hectares. In 1983, collective and state farms and inter-farm enterprises produced 89 per cent of the national agricultural commodity output (the remaining 11 per cent of commodity output came, basically, from the collective and state farm workers' allotments).

Droughts, which in recent years have become more frequent, cause considerable losses to Soviet agriculture. As a result of this, from year to year there are marked fluctuations in agricultural production which affect the supply of foodstuffs to the population and the development of the economy as a whole. This is, in fact, the reason why greater attention is being paid to the drainage and irrigation of land in the USSR. Large-scale land improvement installations have been constructed in the country, and existing irrigation and drainage systems are being reconstructed on the basis of modern technology. From 1970 to 1983 the area of irrigated land in the USSR increased

from 11 to 19 million hectares, and that of drained land (in collective and state farms alone) from 6 million to 14.7 million hectares. Although this adds up to less than 15 per cent of all arable land, it now yields one-third of crop output (all the rice and cotton, three-quarters of the vegetables, half the fruit and grapes, etc.). However, there are still considerable shortcomings and deficiencies in the operation of the drainage and irrigation systems which have been constructed. A considerable proportion of the drained or irrigated areas have not yet produced the planned yield, and the capital investment is consequently not yet giving the necessary return.

In 1984, the USSR adopted a long-term programme for land improvement and the more effective use of improved land covering the period 1986-90 and beyond, up to the year 2000. Under this programme, large-scale measures are to be implemented to increase the effectiveness of irrigated and drained land, to accelerate the development of irrigated agriculture in the south of the European part of the country in order to create there large zones where agricultural production can be guaranteed, to continue the development of irrigation in the Republics of Central Asia and the Transcaucasian area and to carry out a series of land-improvement measures in other agricultural zones of the USSR.

The branches of the agricultural machinery industry and also the industrial and social infrastructures will develop at a faster rate. Thus, with an approximately 30 per cent growth in investment in the whole agro-industrial system in the current decade, investment will be more than doubled in the tractor and agricultural machinery industries and in the manufacture of machinery for stockbreeding and the animal feed industry, almost tripled in the manufacture of machinery for the food industry and increased by 1.9 times in road building and 3.3 times in municipal services. Investment in storage and processing is being increased. Over the ten-year period, technical equipment to the value of 15,000-17,000 million roubles is being allocated to the food industry, state trade and consumer co-operatives. These investments will make it possible to increase the scale and the quality of food processing, and to increase the capacity of grain

elevators, storehouses and cold storage plants. Special attention is being paid to improving the transport service and providing all branches of the agro-industrial system with various types of packing materials.

In the next few years there will be a sharp rise in the level of industrialization in agriculture. At present, 2.7 million tractors are already in use in agriculture and there are 794,000 combine harvesters. The power developed by all the tractors, combine harvesters and motor vehicles (524.7 million horsepower) is more than 1.3 times as much as that of all the power stations in the country. Country areas are served by a widespread repair and servicing organization with almost 400 repair factories and a network of specialized repair works and repair shops. The power and the operating speeds of agricultural machinery have increased.<sup>5</sup> However, the reliability and service life of agricultural machinery are increasing slowly. Over the last fifteen years, there has been a considerable rise in its cost. Expenditure by industry on the development of more sophisticated equipment is naturally increasing. At the same time, the new equipment should cost relatively less if the basis of unit of useful work or product produced is calculated. However this requirement has not been met. During the next few years, therefore, investment in the agricultural machinery industry will be required to achieve a considerable increase in the economic effectiveness of new agricultural equipment.

Better functioning of the agro-industrial system depends on the development of its management structures and substantial changes in them. Until recently, this was mainly done by strengthening and establishing new specialized ministries and other government departments. Thus the State Committee for Agricultural Technology, the Agricultural Chemical Union, the Ministry of Land Improvement and Water Conservancy of the USSR, the Ministry of the Tractor Agricultural Machine Industry, the Ministry for the Production of Mineral Fertilizers, organizations involved in construction, storage, and transport and other organizations providing services to agriculture were established. To overcome lack of communication between departments and to strengthen the centralized co-ordination of functions, the Union-

Republican Ministry of Fruit and Vegetable Farming was set up in 1980. This ministry is responsible for all types of activity in the production, procurement, processing, storage and sale of fruit and vegetables. This was the first step in the establishment of special managing bodies.

However, the experience of the last few years has shown that this has destroyed the unity of sectoral and territorial planning. In a number of instances, the main emphasis is being placed on solving problems specific to certain sectors, and suggestions from local managing bodies for improving the structure of the agro-industrial system and eliminating bottlenecks and imbalances are not implemented. This is because until very recently, funds and material and technical resources for the development of the agro-industrial system were dispersed among the various ministries and departments. These in turn distributed them to the numerous enterprises and organizations, so that they found their way to the countryside along very many independent channels. Each sector develops its own material and technical infrastructure and its industrial and social facilities on the spot, without liaison with its associates. As a result, not only have imbalances not been eliminated between the industrial capacities of various sectors at the provincial and district levels, that is, where production actually takes place, but they have even tended to become more pronounced.

Appropriate managing bodies have been established to broaden inter-branch liaison and strengthen interdepartmental co-operation. In the districts, territories, provinces and Autonomous Republics, agro-industrial unions have been set up. Collective and state farms, inter-farm enterprises, procurement, processing and other enterprises connected with agriculture belong to the district agro-industrial unions.<sup>6</sup> The managing body for the district is the Council of the Union, formed by the District Soviet of Working People's Deputies. This council, under the chairmanship of the Vice-Chairman of the District Executive Committee—the Chief Executive of the District Department of Agriculture—includes the managers of collective and state farms and of the inter-farm and other enterprises and organizations of the district's agro-industrial system.

District agro-industrial unions are responsible for co-ordinating the work of farms, allocate part of the joint investments of individual branches and build up centralized resources for the development of the districts' agro-industrial system. At the same time, the legal and economic independence of all the subdivisions of such unions is preserved. The territorial and the branch principal of management is thus expected to combine co-ordination and integration of the activity of enterprises coming under different departments with the maximum development of their independence and initiative.

In the Union Republics, Commissions of the Presidiums of the Councils of Ministers or other bodies concerned with the agro-industrial system have been established. In the Council of Ministers of the USSR a Presidium Commission on the Agro-industrial System, headed by the Deputy Chairman of the Council of Ministers has been established. Improved management is leading to much better communication between departments, increasing the incentives to achieve good results, reducing administrative staff, and creating conditions for more precise and effective control of all parts of the agro-industrial system.

Under the new method of management, the role of local bodies in the development and specialization of the agro-industrial system of the district, province or republic is becoming much more important. The growth of specialist sectors whose production is chiefly for use outside the particular province and the development of sectors that are of local importance are both being taken into consideration. The economic type and composition of the agro-industrial system of each province are being determined with the aim of fostering better use of local resources and the further growth of food production in the country.

The method of territorial management has been tried for the agro-industrial system and has proved its worth in economic experiments conducted in a number of republics (Latvia, Estonia, Georgia, Moldavia, RSFSR). Thus, during an experiment in Georgia, the agro-industrial unions demonstrated that they provide a more integrated management of all the parts of the agro-industrial system at their level, and hence ensure their development in a

more balanced way. At the same time, the centralized resources—for economic development, socio-cultural measures and housing, and material incentives—of the district agro-industrial unions have become the most important part of their economic machinery.

During an experiment in the Abasha district of Georgia (from 1974 to 1981) output of agricultural produce almost doubled, that of vegetables increased eightfold, and of meat fourfold. There was a considerable improvement in the relationship between agricultural production and the storage and primary processing of produce. The earnings of rural workers rose sharply and there was a big increase in the construction of buildings for social and cultural purposes in the district.

Large-scale measures are planned in order to increase the profitability of collective and state farms. From the beginning of 1983, the prices paid to them were raised and additional payments introduced for production under the most unfavourable conditions, and in enterprises running at a loss or with low profits. This adds up to roughly 16,000 million roubles per annum. Collective and state farms have had bank loans to the value of 9,700 million roubles written off, and the repayment of debts of over 11,000 million roubles has been rescheduled. This is not just an instance of an occasional increase in purchase prices and of bringing them into line with actual production costs. What is being proposed is the maintenance of price parity in inter-farm barter with the aim of ensuring the necessary profitability of collective and state farms.

In 1983, there was already an improvement in the economic indices of the work of collective and state farms. Without counting the rise in purchase prices, their profits rose by 7,400 million roubles and came to a total of 23,600 million roubles. All this is creating a firm foundation for the future growth of agricultural production in the country.

Important changes have been made in the economic relations between the units operating within the agro-industrial system. Evaluation of the work of organizations providing services to collective and state farms and bonus payments to their managers and specialists are based not only on the services rendered but also on the results of agricultural production. This in-



Opening up of new fields for Soviet agriculture in Mechtchera, Vladimir region. APN.

creases the incentives of all the departments on which agriculture depends to improve its results, increase agricultural output and raise its quality.

Special emphasis is being given to the development of economic independence and to strengthening the principle of self-supporting operation as the basis for an increase in the economic effectiveness of collective and state farms which are the bedrock of all agricultural production. For this purpose, the organizational and economic independence of agricultural enterprises is being increased.

Important measures are planned in order to improve material incentives for collective- and state-farm workers by the widespread introduction of collective contracts, piece-work plus bonus payments, more payments in kind, the introduction (as in industry) of district cost-of-living adjustments to wages, and wage rises for a number of jobs. The main concern is to link wages with actual output. (At the moment, agricultural labour is organized, as a rule, on the basis of short-term orders issued to workers for carrying out individual tasks (operations).

For example, until very recently, 85–90 per cent of the earnings of machine operators concerned with crops were linked to the completion of individual tasks and only 6–8 per cent with the quantity of produce grown.)

As the development and operation of the agro-industrial system depend more and more on the leading sectors of the country's economy, which from the organizational point of view are not part of that system, future increases in the effectiveness of food production also depend largely on improvements in the machinery of the economy and on a restructuring of intersectoral relations in the economy as a whole. The general principle underlying this restructuring is to direct each part of the economy to the results of its activities in all the other branches in which its products are used.

The Food Programme makes provision for large-scale measures for the social development of rural areas (the construction of village cultural and welfare facilities and all the necessary social infrastructure). Some 160,000 million roubles have been allotted for these purposes for the ten-year period 1981–90. No less



than 378 million m<sup>2</sup> of housing are to be built in rural areas, which is 1.4 times more than over the previous decade. Some 138,000 km of motor roads for general use are to be constructed and 150,000 km of farm roads, which is twice as much as for the previous decade. From 1981 to 1983 alone in rural areas, housing with a total (useful) area of 97 million m<sup>2</sup> has been built.

The Food Programme elaborated in the USSR is a constructive contribution to solving the world's food problem. Man's most pressing problem today is the elimination of starvation and malnutrition. What is more, there is a constant increase in the absolute extent of chronic starvation in the world.<sup>7</sup> The epicentre of the world food crisis is in the developing countries of Asia, Africa and Latin America, recently freed from colonial dependence.

The food problem in the developing countries is a complicated and many-sided phenomenon in which the economic, demographic, ecological, social and political aspects are combined. The basic factors responsible for the serious food situation of the population of these countries are the deep-seated backwardness of their economies, and especially the agricultural sector, as a result of their prolonged colonial exploitation, the fact that the necessary radical socio-economic transformation of the countryside has not taken place or is incomplete, and hence the preponderance of insufficiently productive, traditional forms of farming and the corresponding social structures.

In addition, external factors are having an increasingly adverse effect on the economic development of these countries. Their dependence on the United States and the other developed capitalist countries for the supply of grain products has increased.<sup>8</sup> As is well known, the United States makes full use of this for its political ends.

The increasing activity of multinational agro-industrial corporations in many developing countries and their penetration into profitable branches of the food economy directed towards export and in part towards satisfying the comparatively narrow demand of the wealthy sections of the population, frequently leads to the one-sided development of agriculture, resulting in the reduced production of traditional crops for the mass market.

At the beginning of the 1980s, the prolonged economic crisis which took hold of all the capitalist countries had a profound and adverse influence on the world food situation, as it led to more unfavourable credit conditions, sharp fluctuations in rates of exchange and a substantial drop in the prices of raw materials supplied by the developing countries. This resulted in a sharp increase in the indebtedness of the developing countries, which placed many of them on the brink of economic disaster.

Output forecasts for the main agricultural products indicate that in most developing countries in the 1980s, as compared with the end of the 1970s, there are unlikely to be any very great changes in the food situation. During the present decade there is also little likelihood of a substantial modernization of agriculture. At the same time, as the 1980s proceed, one can anticipate a further widening of the differences in levels of the general economic development of individual groups of newly independent countries, which will lead to changes in their food situation. On the whole, during the 1980s, the dependence of all the newly independent states on the world food market will probably not only continue but increase.

The press in Western countries prints many speculative opinions about the shortage of individual foodstuffs in the USSR and about a certain increase in its grain purchases on the world market. What can be said about this? First of all, there is no doubt about the growth of agricultural production in the USSR and about the increase in per capita consumption of basic foodstuffs, including those of high quality. Secondly, there are practically no countries in the world which do not have to turn to the external market to satisfy their needs, including the need for food. Thirdly, the USSR imports those products of which it as yet produces insufficient quantities (soya, grain for animal feed, meat) or which it does not produce at all (coffee, bananas and other tropical agricultural produce). At the same time, the USSR exports a number of foodstuffs, certain raw agricultural produce and the machinery, equipment and fertilizers necessary for their production. What is more, according to our calculations, in the 1990s the Soviet Union will be able to expand considerably its exports of grain for human consumption, and of wheat in the first instance.

It must be stressed that the more pronounced international division of labour makes it a perfectly regular feature of modern international relations to have recourse to world markets to eliminate a shortage (or even a partial shortage) of certain particular types of foodstuffs and raw materials for their production, as well as to export other kinds of foodstuffs to obtain foreign currency. In this, the USSR has no intention of infringing anybody's interests but acts solely because of the need to satisfy the requirements of the Soviet people and has economic relations with its partners on the basis of mutual advantage.

The Food Programme of the USSR in particular was drawn up because of the need, in the final analysis, to end the import of grain for human consumption from capitalist countries. At the same time, the USSR has no intention of refusing the benefits of the international division of labour and international trade.

Co-operation between the USSR and the countries of the socialist commonwealth with the exchange of products of the agro-industrial complex, has been long and successful. The 1980s will see a considerable expansion of this co-operation.

Thus the USSR is in favour of all-round co-operation and mutually advantageous trade with firms in those capitalist countries that do this without discrimination or political pressure. This is also important to note because the Food Programme of the USSR opens up broad possibilities for greater co-operation with capitalist firms in many areas of the agro-industrial system.

The attitude of the Soviet Union to the food requirements of the developing countries is one of great understanding. Soon after the establishment of the Soviet state, Lenin wrote that the struggle against starvation is 'the most elementary task of all human society', and that 'combined efforts are the only salvation from starvation'. In seeking a radical solution to the food problem in these countries, Soviet delegations, both at the General Assembly of the United Nations and at sessions of the World Food Council, have frequently raised the question of the link between the solution of this problem and the adoption of measures to reduce military expenditure. As is generally known, over \$1,000 million per day are spent

on creating the means for the mass destruction of the world's population. Even a small part of this expenditure could cover the global costs necessary to eliminate starvation. In this connection, as is generally known, the Soviet Union has put forward relevant proposals but so far they have met with no support from the developed capitalist countries.

However, even with the burden of arms expenditure which the Soviet Union has to bear, it has more than once come to the aid of the peoples of other countries, among other things, in solving the food problem. The newly independent states derive the greatest benefit from Soviet assistance in establishing their own material and technical infrastructure in agriculture and other sectors associated with it. In this, wide use is made of long-term contractual agreements. On 1 January 1984, 299 agricultural enterprises had already become operational (and 581 were under construction), 277 enterprises had become operational in the food industry (and 216 were under construction), and 55 light industrial enterprises had become operational (29 were under construction). The socialist countries offer friendly help to the developing states in establishing those forms of production which will meet the internal requirements of those states, help them to strengthen their economic independence and at the same time improve the food situation of their peoples.

An important aspect of Soviet aid to newly independent countries is the training of skilled workers for agriculture. This is implemented by a system in which personnel training in the country concerned and training in the Soviet Union are mutually complementary. Over a comparatively short period, more than 33,000 people have been trained by highly qualified Soviet specialists (at establishments being constructed) in the developing countries themselves.

The USSR carries out considerable trade in agricultural produce and the means of its production with the developing countries. In 1955, the USSR traded with only twenty-six newly independent states, but in 1980 it was already trading with ninety-seven. For the 1980s the USSR plans a considerable expansion of its imports of tropical and subtropical agricultural produce from these countries.

The development of all forms of co-

operation with the newly independent countries and aid to them in respect of food production, reflecting the growing economic potential of the USSR, remains one of the most important aims

of Soviet foreign economic policy during the 1980s.

[Translated from Russian]

## Notes

1. All statistical data quoted here and in the rest of the text are from the statistical yearbooks, *The Economy of the USSR in 1980* and *The Economy of the USSR in 1983*.

2. In 1980, average food consumption per head of population (in kilocalories per day) was 2,590 in the world, 3,329 in the developed countries and 3,443 in the USSR.

3. *The Food Programme of the USSR for the Period up to 1990 and Measures for its Implementation*, pp. 10–11, Moscow, Politizdat, 1982.

4. In the 1980s, fixed productive capital in agriculture will have increased roughly 1.5 times, energy capacity in collective and state farms 1.6 times (in 1990, 210,000 million to 235,000 million kWh of electricity will be supplied to agriculture), the quantity of mineral fertilizer

supplied will increase 1.7 times to 30–32 million tonnes in 1990 (recalculated as 100 per cent nutrient content). The area of irrigated land is to be increased to 23–25 million hectares in 1990, and that of drained land to 18–19 million hectares. Almost 3.8 million tractors, 1.2 million combine harvesters and other agricultural machinery to a total value of 67,000 million to 70,000 million roubles are to be supplied to agriculture.

5. Whereas tractors in 1965 had an average rating of 48 hp, this had risen to 75 hp in 1980. In 1983, 373,000 tractors with an average rating of more than 85 hp were supplied to agriculture.

6. On 1 July 1983, there were 3,105 district agro-industrial organizations in the country, grouping about 100,000 enterprises and organizations; including 52,000

farms, 7,500 industrial enterprises, 23,000 enterprises providing services to collective and state farms, 8,000 construction enterprises, 2,600 consumer co-operatives, etc.

7. FAO statistics for chronic starvation in the world are: 360 million people for the period 1969–71, 435 million for the period 1974–76, and 490 million for the period 1980–81. In the early 1980s, the total number of people in the world suffering from various forms of malnutrition was more than 1,000 million.

8. Average grain imports by the developing countries grew from 26.5 million tonnes in 1961–65 to 66.1 million tonnes in 1976–80 and 80.5 million tonnes in 1981, exceeding the volume of grain imports by the developed capitalist countries.

## Bibliography

GORBACHEV, M. S. *Prodovol'stvenna a programma iadac i eë realizaci ii* [The Food Programme and the Problems of its Implementation]. *Kommunist*, No. 10, 1982, pp. 6–21.

*Materialy Plenuma central'nogo Komiteta KPSS, 23 oktjabrja 1984* [Documents of the Plenum of the Central Committee of the CPSU, 23 October 1984]. Moscow, Politizdat, 1984, 64 pp.

MOZHIN, V. P. (ed.). *Prodovol'stvennyj kompleks strany* [The National Food Supply System]. Moscow, Ekonomika, 1983. 232 pp.

*Narodnoe hozjajstvo SSSR v 1980. Statisticeskij ezegodnik* [The Economy of the USSR in 1980. Statistical Yearbook]. Moscow, 1981.

*Narodnoe hozjajstvo SSSR v 1983 g. Statisticeskij ezegodnik* [The Economy of the USSR in 1983. Statistical Yearbook]. Moscow, 1984.

*Prodovol'stvennaja programma SSSR na period do 1990 goda i mery po eë realizaci ii. Materialy majskego Plenuma CK KPSS 1982* [The Food Programme of the USSR for the Period up to 1990 and Measures for

its Implementation. Documents of the May Plenum of the CC of the CPSU]. Moscow, Politizdat, 1982. 111 pp.

TIKHONOV, V. A. (ed.). *Prodovol'stvennaja programma: problemy razrabotki i realizacii* [The Food Programme: Problems of Elaboration and Implementation]. Moscow, Nauka, 1983. 340 pp.

VERMEL, D. F.; GONCHAROV, V. D.; KNYAZEV, N. K., et al. *Prodovol'stvennyj kompleks* [The Food Supply System]. Moscow, Kolos, 1982. 303 pp.

# Food systems and society in India: the origins of an interdisciplinary research

Pierre Spitz

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## Indian social sciences and agrarian problems

The history of the social sciences and their application to land reform problems in India has been brilliantly analysed by P. C. Joshi;<sup>1</sup> in particular, he showed how the concepts, methods and organization of research met the needs of the British administration but could also sometimes be used by the nationalists. Any interested reader should refer to this study in order to obtain a better insight into the originality of the Indian pioneers of rural analysis such as M. G. Ranade and Radhakamal Mukherjee.

R. C. Dutt formulated the concept of the economic drain of British colonies by the British Empire in connection with the increasing number and severity of famines in the second half of the nineteenth century. As a rule, economists who are not familiar with the history of Indian economic thought know nothing about his analysis, although it is very close to the centre-periphery type of analysis.

The Indian mathematical tradition found a new outlet in the colonial period in the sphere of statistics. For the British administration needed quantitative data, in particular as few such data were available for the very large population of India. Since the income of the

Crown depended mainly on land taxes, the administration's policy was to raise as much money as possible by taxation without causing famines which would make the peasants bankrupt. As we have pointed out elsewhere,<sup>2</sup> the hundreds of documents about famines written by civil servants, both British and Indian, working in the country, are evidence of this policy.

Improved methods of data collection and statistical analysis enabled the Indian nationalist movement to supply figures showing that the situation of colonial dependency was related to the impoverishment of the Indian masses—a fact demonstrated by the worsening of the famines.

The famine in Bengal in 1943 was the last example of a tragedy clearly related to colonial policy; it caused the death of between 1.5 and 3 million people and has left its mark on the collective memory of the Bengali people. The many analyses of its causes and consequences made even today are based on data collected by P. C. Mahalanobis, one of the famous names in modern statistics and the historical leader of the dynamic Indian school of statistics.

India's accession to independence in 1947 eliminated a major cause of uncertainty about the food supply and of famine. It is true that the process of impoverishment, which was

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related to colonialism, had created situations which could not be easily reversed. The local handcraft industries had been ruined, and could not be restored in their traditional forms. Powerful local interests weighed heavily on land structures, foreign capital continued to play an important role, but there were great hopes of inducing rapid development.

These hopes were largely centred on the Planning Commission. It was expected to evolve what Nehru defined as a rational, scientific and modern method—within a democratic framework—which would gradually instil into the whole nation a 'scientific temper', to use his own terms.

The commission was able to call upon the resources of a number of research and teaching centres: the Delhi School of Economics, which was established in the early years of independence under V. K. R. V. Rao who, in 1959, set up an institute specializing in the study of economic growth; the Gokhale Institute of Economics and Politics, under D. R. Gadgil; the Department of Economics in the University of Bombay, directed by M. L. Dantwala; the Lucknow School of Economics and Sociology, founded by Radhakamal Mukherjee; the Indian Statistical Institute, founded by P. C. Mahalanobis, and others. Many foreign development experts of international reputation from all over the world and from all schools of thought, including socialists and Marxists (O. Lange, M. Kalecki and C. Bettelheim, for example), have been invited to visit the last-named institute.

At the local level, anthropological and economic studies of villages developed rapidly in the 1950s, to meet the need for a better understanding of the structures on which this policy of national development could be based and of the obstacles in its path. The desire to change agrarian structures resulted in many studies, the main characteristics of which were analysed by P. C. Joshi in his contribution referred to above. This text, a hundred pages in length, which should be required reading for any expert or student of land-reform problems in the Third World, is only one chapter of the seven volumes which review works on economics published in India since independence. This ambitious project to evaluate research in the social sciences since independence was

launched by the Indian Council of Social Science Research (ICSSR) in 1970. To give the reader an idea of the amount of research carried out on development problems in India since independence and also of the scope of the ICSSR project, it should also be said that the specifically economic field, which is covered by seven volumes, is itself only one of the seven domains of the social sciences explored and that P. C. Joshi's chapter alone includes more than one thousand references, two hundred of which are references to foreign researchers.

Since independence, then, the output of Indian works on the social sciences has become one of the largest in the world. Dozens of scientific periodicals and journals contain specialized analyses in economics, sociology, political science, geography, history and so on, all these analyses having implications (whether explicit or not) for the development of the country. One particularly influential publication of this kind is published weekly (*Economic and Political Weekly*). Moreover, the social science departments of the 120 universities in the country (in 1983) produce several thousand studies every year, which are usually mimeographed and have few readers.

Indian specialists in the social sciences, especially those who were in the struggle for independence, hoped, as everyone did, that the country would develop rapidly once the colonial yoke had been removed. Moreover, they considered that they had a special responsibility for the nation's development. At last they could stop criticizing colonial policy and start to play a positive and constructive role. They could help to mobilize the considerable technical and scientific potential for national development, and encourage the reform of an administration which no longer had to confine its attention to the repressive tasks of collecting taxes, enforcing justice and keeping order, but whose duty it was to acquire new functions for development within the framework of a parliamentary democracy. Finally, the latter ensured that ideas could be exchanged between different schools of thought and that the economic and social policies put forward by all sides could be discussed and finally decided upon by the free interaction of social forces.

These hopes were confirmed in several sectors and in several regions, but much more



Procession of numerous dishes, during an important wedding ceremony, Jaipur, India. H. Cartier-Bresson, Magnum.

slowly than expected. National industry, both public and private, has developed in various spheres, including that of advanced technology (nuclear physics, electronics). The importance of foreign capital has declined in relative terms, and transnational firms do not play a decisive role in the national economy. Land reforms have cut down the worst abuses, and the land tax is no longer an important source of income for the state. The economy of India, unlike that of many other Third World countries, does not depend on the export of crops or minerals. Food production has increased considerably in certain areas, particularly in the north-west. Recently, large-scale imports of cereals have stopped, and cereals are occasionally exported. On the other hand, imports of oil-seeds and edible oils have become a problem.

However, neither the daily hunger of the unemployed in the towns, nor the seasonal hunger of the poor workers in rural areas has disappeared, and in certain areas it has increased—for instance, in the east of India (West Bengal, Bihar, Orissa) where, however, large centres of heavy industry and mining have been developed over the past hundred years, and have grown considerably since independence. This industrialization has done little to stimulate agricultural and food production, whereas in the north-west (Punjab and Haryana) rural prosperity has increased rapidly, although there is no heavy industry. But the increase in agricultural production in this area has stimulated the small- and medium-sized industries that supply tools for agriculture or process its products. This twofold disjunction between agriculture and heavy industry makes one doubt the validity of the simple causal connections often mentioned in works on development. Moreover, as we have just seen, many terms commonly found in such works (foreign capital, transnational firms, export crops, military dictatorships, and so on) are not applicable to India.

### **Background to the 'food-systems and society' project**

The United Nations Research Institute for Social Development (UNRISD), Geneva, gave considerable attention to north-west India in its

research programme on the consequences of the introduction of high-yield varieties of cereals in Africa, Asia and Latin America. As regards India, one point that was made clear by this research, which was directed by the late Andrew Pearse, was the fact that the policy of the widespread introduction of high-yield varieties of cereals, along with large-scale stimulation of the consumption of agricultural inputs (fertilizer, water, pesticides, energy) had enabled spectacular increases to be made in production, mainly in that of irrigated wheat in the north-west. The results were far less encouraging in the rice-growing areas of eastern India, and distinctly poor in the other areas of non-irrigated agriculture, where the main crops are the so-called secondary cereals (millet and sorghum in particular). More generally, at the beginning of the 1970s, the results of what is known as the policy of modernizing cereal-growing in the three continents appeared to be spatially and socially increasing the disparities between wheat-growing and non-wheat-growing regions, and between irrigated and non-irrigated regions, as well as between those farmers who had more land and capital and those who had less.

Unfortunately, the persistence of food scarcities and famines in the three continents over this period demonstrated that no technical miracle had taken place in the less well-endowed regions, and that neither food production nor agricultural employment nor food purchasing power had increased on a scale which would protect the most vulnerable from hunger.

In 1977, in view of the findings of this research programme and the famines that occurred from 1972 to 1974, UNRISD decided to launch a new research programme on 'Famine-risk in the Modern World'. Accordingly, we drew up projects for north-east Brazil, Haiti, the countries in the Sahel and in East Africa, Bangladesh and of course, east India, our object in the latter case being to study the reasons for the lag in its economic growth as compared with the north-west, which we had already studied, and, if possible, to find ways of fostering the development of this region, which has an overall shortage of cereals.<sup>3</sup>

The three states in east India (West Bengal, Bihar, Orissa) have a total population

of over 150 million. These three states have certain characteristics in common (in particular as regards land structures) with the eastern half of Uttar Pradesh, the eastern districts of Madhya Pradesh, and Assam. We were thus confronted with the problem of understanding the dynamics which affected a total of almost 250 million people.

There is no lack of research on the causes of the persistence of hunger and poverty in the area, especially in West Bengal, and programmes for action abound. Thousands of articles, books and doctoral theses have been written on these questions since independence. High-level specialists of all schools of thought have carried out surveys in the towns and rural areas in the region, statistical information is plentiful, and sophisticated methods are used to analyse it. Last but not least, although the state of West Bengal has had governments of different political tendencies since independence, no great difference has been noted in the results of their action. However, in recent years the united left-wing government has made a great effort to carry out land reforms and in particular to improve the status of tenant farmers. Despite favourable preliminary analyses of the agrarian situation, a firm political will at governmental level and administrators who are often highly motivated and co-operative, the results have been disappointing.

In such a discouraging situation, the first temptation is to take refuge in theoretical discussions between different schools of thought (or within them) without changing either the empirical material or the methodology used to collect and interpret it. Theoretical dissensions give rise to political dissensions within parties, factions and even pressure groups, just as the former use the latter to justify them.

There is also a tendency towards empiricism which accumulates data in the hope that they will mean something in the long run. When one is confronted with these opposing passions, it is of course easy to recommend the prudent path of research by elaborating hypotheses, collecting data, proving or disproving these hypotheses, combining theory and practical surveys, analysis and synthesis. These specifically scientific qualities, however, are precisely the main characteristics of many

of the research studies carried out in West Bengal on landless agricultural labourers, tenant farmers, agricultural credit, marketing, industry, urban poverty and so on, yet such studies do not appear to have changed the state of affairs.

The truth is that the mere accumulation of such partial studies cannot produce a whole that has any meaning. Moreover, the variables resulting from the environment (climate, soil) and from agricultural techniques (on which, however, employment, income and therefore food purchasing power depend) are not really taken into account in these economic and social analyses. When they are, they seldom represent the huge field of the real and the possible in the biological sphere. For agriculture, which is the major source of employment and income in the region, is one of the most difficult jobs in the world. Contrary to what is usually thought, it is not repetitive or routine work. It calls for the management, in a universe with constantly changing conditions, of the extremely complex relationship between constantly changing factors—those of soil, climate and the whole of the physical environment—and the characteristics of the plant and animal species which are themselves constantly being diversified by sexual reproduction, whether spontaneous or controlled.

This is why a different approach to research has proved necessary, an approach which is not segmentary, divided and unidisciplinary, but systematic, holistic and transdisciplinary, and in which special attention is paid to the connection between the natural and the social sciences.

When informed of the UNRISD project, the Bengali research workers too were convinced of the need to attempt such interdisciplinary research. They hoped, and still do, that this relation between the synchronic and diachronic dimensions, this emphasis not on the parts but on the connecting links, would make it possible to isolate areas of choice and, therefore, possible fields of action which could be taken over by various social forces. The composition of the original group reflected this desire for interdisciplinarity, since it included not only Boudhayan Chattopadhyay, an economist who is well aware of the social, political and cultural dimensions of development and



who was the architect of the project, but also one of the best geographers of the region, Satyesh C. Chakraborty, and an outstanding soil scientist and agronomist, Sushil K. Mukherjee.

It was in conjunction with this group that the project for the study of famine risk in east India was planned in 1977. On the methodological level, famine was considered as the crisis of a food system, a crisis which made it possible to identify the social actors of such a system as well as the strategical relations between its component parts. This was why the original UNRISD project on 'Famine-risk in the Modern World' was sub-titled 'Studies of Food Systems under Conditions of Recurrent Scarcity'. In order to extend the approach to less acute situations of food scarcity, the title of the project was changed, and in 1979 it became the present research programme on 'Food Systems and Society'; but no change was made in the part concerning east India.

### **Nature and society: technological choices and agronomy**

The term 'food system' was not much used before 1976, but since then it has become quite common, and now every author has his own definition of it or, if not, uses it in his own way—and the same is true of institutions. It is often only a handy way of referring to what used to be called circuits of food products: production, processing, marketing, distribution and possibly also the inputs necessary for agricultural production. The increasing use of this expression is a step forward, even at this simple descriptive level, for at least it suggests that more needs to be done than to increase food production if famine is to be overcome. Sometimes, analysis in terms of food systems also includes analysis of the relations between economic, social and cultural factors, which may affect groups at various levels (local, national and international).

Relations between technical factors (climate, soil, water and so on) and socio-economic factors are not so frequently taken into consideration. To do so is the aim of the 'Food Systems and Society' project in east India. The

success of food systems is assessed in relation to the health of the various groups of the population. This is why doctors—for instance, Dr G. P. Dutta and Dr R. Devanath—now work with specialists in the social sciences (economists, sociologists, anthropologists, historians) and the environmental sciences (soil scientists, meteorologists, hydrologists, agronomists and so on).

In the first stage (1979/80), a small team of specialists under B. Chattopadhyay used the material and data already available, before launching a vast field survey in 1981. The present study is intended to show the reader the circumstances in which this project was launched: scientific research in India—which itself took place in a specific historical context—developed at the very time when questions were being asked about the economic, political and social circumstances of east India and more specifically those of West Bengal. We do not intend to give an account of the findings of these research studies, on which dozens of texts, representing thousands of pages, have been written. Before giving a few details concerning the field surveys, let us look at some of the principal themes which have been dealt with in relation to the connection between society and nature. We have described the rise of the social sciences in India, and we must now say something about the historical and social characteristics of the agronomic research which has been carried out in India since independence and has had a marked influence on technological decisions in agriculture.

A series of studies directed by B. Chattopadhyay deals with changes in food production, food prices and the terms of exchange between agriculture and industry since 1950.<sup>4</sup> Fluctuations in the production of various cereals and their prices of course suggest that yearly climatic variations should be studied. We must point out in this connection that many economists and sociologists are suspicious of climatic studies (and technical data in general). For, as they favour the status quo, they will not admit that inequalities between social groups and between nations play an important part in the development of food scarcity and famine, and are apt to say that the climate alone is responsible for these crises of subsistence. Those who wish to change the order of things at both



Scientific research in India: a laboratory for experimenting in food irradiation, at the Bhabha Atomic Research Centre, at Trombay. Dominique Darr/Gamma.

national and international level are tempted to exaggerate in the opposite direction and to deny the part played by the climate. The same sterile opposition between the same extreme ideological attitudes is to be found as regards demographic factors. But a scientific approach calls for an analysis of the relations between nature and society; and such an analysis was made as part of the project undertaken by the International Federation of Institutes for Advanced Studies (IFIAS) on 'Drought and Man'. Under the direction of Rolando Garcia, an Argentinian meteorologist, who was the director of the World Meteorological Organization's Global Atmospheric Research Project, the IFIAS project<sup>5</sup> constituted a considerable contribution to the methodology of the UNRISD 'Food Systems and Society' project. Rolando Garcia, who is also an epistemologist and a specialist in the history of science<sup>6</sup> developed the principles of his systems analysis in a contribution published by UNRISD,<sup>7</sup> and is

applying it in the 'Food Systems and Society' project which he is at present directing in Mexico.

The study of the relation between climatic factors and agricultural production entails studying the technologies advocated by the agricultural services and usually supported by price and credit policies. Any climatic variation may have quite different effects, depending on the technology chosen. A simple example is that of the choice which the specialist in plant improvement has to make between maximum yields and stability of yields. In a poor country, where the loss of a crop can mean death (if there are no reserves and credit cannot be obtained), the aim of research must be to obtain not only a high yield, but a certain degree of stability in yields over good and bad years. As agriculture in poor countries is highly dependent on climatic variations, it is preferable to concentrate on stability, that is to say, to select varieties which do not necessarily have

the highest potential yield (under the best possible conditions).

Agronomy has not developed, either in India or elsewhere, in an economic and social vacuum. Its organization, aims and priorities were fashioned to a large extent by American agricultural experts in the 1950s and 1960s;<sup>8</sup> that is to say, they were based on a model which was itself fashioned in accordance with the way in which agriculture and, more generally, the economy developed in the United States. Although much had been achieved in biological and agricultural thinking in India before independence, it may rightly be said that there was an 'implantation' of American agronomy in this country, to use the terms coined by Ralph Pieris, the sociologist, with regard to the social sciences.<sup>9</sup>

This approach to agronomy, which is the one mostly adopted in Indian research, is taught in the agricultural universities, which are modelled on the Land Grant Colleges in the United States. It stresses homogenization (not only a single species, but a single variety in the same field) and the temporal and spatial separation of the production processes. Instead of looking for ways to economize on inputs (fertilizers, pesticides and energy) by a systemic approach using complementarities, synergies and homoeostatic possibilities, by homogenization and separation it encourages a consumption of inputs which only those farmers who have the most land and capital can afford. It is therefore also favoured by private industrial interests, both national and international. At the level of scientific organization, it is characterized by the compartmentalization of agricultural subjects, both in teaching and in research. At the ideological level, it is concerned with one class of people only, the 'progressive' farmers, who use 'modern' methods. The others, the vast majority of Indian peasants, are commonly considered as backward creatures of habit. Not only is their creative ability not recognized, but they are often considered as barriers to progress. The adoption of this approach means that the complex associations of crops which they have been managing for centuries are doomed to disappear and be replaced by single variety and single species crops. Yet these associations of crops are based on homoeostatic mechanisms which, once they

have been studied and improved, would make crop systems less vulnerable to variations in climate, pests and diseases—and this, of course, is not to the liking of those who sell pesticides, such as the derivatives of methyl isocyanate which, it has now been established, has caused so much damage in Bhopal.<sup>10</sup> They also make for the large-scale employment of manpower and a more equitable distribution of work and income throughout the year.

## **New alliance and scientific ecology**

For a long time, scientific and technical thought developed on the basis of the knowledge which the people had acquired as a result of centuries of observation and experimenting. Since the scientific revolution in Europe, the first, instinctive, reaction of science has been to despise its folk sources. The scientific development that became possible as a result of this break with the past was spectacular, but at the same time, the classical scientist, whose aim was to understand nature and to master it, placed himself outside it. In the nineteenth century, the 'pure' knowledge of the rationalist and the scientist freed itself of all social, cultural, religious or magical connections; historians of science forgot that Newton was inspired by alchemy. The only kind of time they acknowledged was the mechanical time of the movement of the planets and the pendulum. The illiterate peasant, trapped in the matrix of nature and its biological timing, was the opposite of the scientist of the classical age. Today, the most advanced modern science is that of indeterminism, of the irreversibility of time and of questioning. One of the most distinguished representatives of this advanced science is Ilya Prigogine, who was awarded the Nobel Prize for Chemistry. He writes: 'Classical science always assumes that it is faced with a monotonously stupid world. . . . The more nature is diminished, the more are those who are outside nature exalted.' And later, referring to the 'new alliance' of man within contemporary science:

The metamorphosis of contemporary science is not a break with the past. On the contrary, we believe that it enables us to understand the meaning and the percep-

tion that lay behind the knowledge and the practices of the past, which modern science, concentrating as it does on a model of automated, technical production, thought it could neglect. . . . When we learn the 'respect' that physical theory demands of us with regard to nature, we must also learn to respect other intellectual approaches, whether they be the peasants' and sailors' traditional approaches or those evolved by other sciences. Instead of passing judgement on the knowledge, practices and cultures evolved by human societies, we must learn to cross-fertilize them, to establish between them links of an entirely new type which will enable us to confront the unprecedented demands of our day.<sup>11</sup>

In the sphere of agronomy, the most recent advances made by this 'new alliance' constitute ecology, that is to say, the scientific study of ecosystems and agrosystems. In order to differentiate this systems analysis of nature and its products from what is known as the ecology movement, we should probably speak of 'scientific ecology', that is to say, the interdisciplinary systems approach which is increasingly being taught in the universities of the industrial countries and practised, on a modest scale as yet, in their research centres. Scientific ecology, the foundation of which was laid at the end of the nineteenth century by E. Haeckel, developed in line with the global scientific movement in recent decades to which Ilya Prigogine refers in his book, and of which he is himself one of the pioneers. Its growth has of course been stimulated by the energy crisis and the growing awareness of public opinion in industrial countries confronted with the deterioration of the environment.

Scientific ecology cannot develop unless there is a very considerable change in the organization of research, and an even greater change in the mentalities of researchers who are used to the intellectual comfort of a single discipline and to individual work, which still to a large extent conditions the system of validating research and allocating resources.

However, despite considerable difficulties of an organizational, ideological and epistemological nature, scientific ecology is developing in the industrialized countries. They can benefit considerably from it. But it is something of an irony that scientific ecology has developed in these countries and not in a country like India.

For, in the first place, scientific ecology and systems analysis are essential to the improvement of the lot of hundreds of millions of

poor peasants. They are still using a pre-scientific systems approach—for example, in their associations of crops. Science must start from their practices and their knowledge, so that these practices can be improved 'from within', by means of a continuing exchange of views between scientists and peasants (or stock-breeders). The discontinuance of these practices and their replacement by so-called modern agriculture mean that large numbers of unemployed people migrate to the towns, which cannot absorb them. The historical example of the United States—where, however, manpower was scarce and land was plentiful—ought to give the élites of less well-endowed countries food for thought: the ghettos of American towns are the result of this modernization of agriculture. In Europe, although agriculture is not highly mechanized and a large proportion of manpower is employed in the main market industries, 60 million men and women left their continent between 1840 and 1920, out of a population of approximately 300 million in 1900.<sup>12</sup>

Secondly, philosophical and scientific traditions in India are particularly well suited to the holistic systems approach. Something of this kind can be seen in the work of the physicist J. C. Bose, who, from 1895 until his death in 1937, carried out ingenious experiments and developed ideas on the relationship between the animate and the inanimate which the British scientific community found very surprising.

The work of Sir Albert Howard, who directed research in agronomy before the Second World War, also provides evidence of the existence of a systems approach in this domain. British, in love with India, he was fascinated by Hindu philosophy and, having spent his life in India studying peasant practices, he advocated, in theory, a holistic approach and, in practice, associations of plants. His name is still mentioned today in the literature of the ecological movement, because of his insistence on the need for a balance between organic and mineral compost. He advocated a method of intuitively systemic analysis:

Instead of breaking up the subject into fragments and studying agriculture in piecemeal fashion by the analytical method of science, appropriate only to the discovery

of new facts, we must adopt a synthetic approach and look at the wheel of life as one great subject, and not as if it were a patchwork of unrelated things.<sup>13</sup>

However, the scientific and financial means of adopting this approach were lacking. When they became available, after independence, these ideas were discarded, and were replaced by a segmented and analytical type of research which fostered a model of the spatial and temporal separation of the processes of agricultural production. The thousands of Indian specialists in agronomy who have been trained in this pre-ecological outlook usually have great difficulty in getting beyond the boundaries of the very narrow disciplines in which they have specialized. Moreover, they have little contact with the social sciences: if they had more, people would perhaps be quicker to realize the need for an ecological and interdisciplinary approach.

Only if there is a political determination to reform agricultural teaching and to reorganize research can this considerable scientific potential be mobilized, not to serve the minority of the most prosperous farmers but to serve all Indian peasants, so that they have employment, an income and food purchasing power, and can survive and enjoy better living conditions throughout the seasons and the years.

## The origin of CRESSIDA

In rural areas, the availability of food, employment and incomes are all governed by the seasons. Just as the indicators of per capita food availability conceal social inequalities, so information about annual averages conceals variations in time. In rural areas, hunger is largely a seasonal matter. The period of transition between two crops is not only a time of food scarcity, unemployment, and hunger, but also a time when power relations are particularly strong and inequitable social relations are reproduced. For in a rural society the weakest must observe certain social norms in their relations with the strongest (farmers, merchants, money-lenders) if they are to live through this period.

In a bad year, these difficult periods can become times of famine, while the marked tendency for the weakest to be dispossessed

and taken over by the richest becomes a reality. There is much talk of selling animals, harnesses, machines, personal possessions, jewels and land, as a last resort. Less is said about those who enlarge their possessions as a result of these crises of survival and increase their economic and social power.

This regulation of agricultural employment and income, hunger and disease by the seasons is the lot of peasants at all times and in all the civilizations which have developed in the temperate and tropical regions (as one approaches the equator, the seasons are less clearly differentiated). In India, the monsoon is an integral part of economic and social life, work and festivals.

However, although there is plenty of statistical information in east India and a large number of socio-economic studies which have been carried out there, little information on the seasons is available. Moreover, the same problem arises in east India as in other regions, when data of different types (economic, demographic, environmental and health) are put together—the problem of the incompatibility of the spatial scales on which these data are collected. Administrative units do not coincide with natural units, climatic data are collected on an irregular grid, and so on. It became clear that field studies were needed if all the problems of the spatial and temporal compatibility of the parameters submitted to systems analysis were to be solved. This was made possible thanks to UNICEF, which offered to finance surveys for one agricultural year in a number of groups of villages in West Bengal and Orissa. In this way in 1979–80, the ad hoc group led by B. Chattopadhyay to carry out the UNRISD 'Food Systems and Society' project became a new interdisciplinary research centre, the Centre for Regional, Ecological and Science Studies in Development Alternatives (CRESSIDA). The aim of this centre is to study everything that is done by man and produced by nature, with a view to the self-reliant development of the country. B. Chattopadhyay writes, in his introduction to the first number of *Transactions*, the CRESSIDA review:

The Food System, interpreted in the proper system sense, is the key-hole through which we have chosen to

look at the interactions of science, technology and society.

While the CRESSIDA manifesto states that:

The right choice has to be based on considerations of natural resources, energy availability, ecosystem and hazards of environmental pollution, employment generations, reduction of inequalities, regional imbalances, meeting needs of the growing population, etc., but not on economic benefits alone and not necessarily on considerations of small and less sophisticated technology. Choices made on such considerations are aimed at self-reliance and generation of an indigenous scientific and technological culture.

The many studies carried out by CRESSIDA, which have been, or will be, published in the CRESSIDA review,<sup>14</sup> illustrate this approach which is based on technological choices. Examples in West Bengal are the studies carried out by S. Sen on biogas,<sup>15</sup> S. Chakraborty on water conservancy,<sup>16</sup> and A. Biswas on the decay of old irrigation systems between 1850 and 1925.<sup>17</sup> The historical method of explaining technological choices is seen to be particularly effective in these studies, as also in that of B. Chattopadhyay on the reasons for the British choice to invest in a railway network instead of making the region's huge river network navigable and capable of supplying an irrigation system.<sup>18</sup> This solution, which was advocated by Sir Arthur Cotton, one of the most famous engineers in British India, would have made it possible to increase agricultural production (and therefore fiscal income), stabilize it and transport the goods produced cheaply. Despite his detailed and scientifically reasoned answers to the 1,200 questions which the British Parliament put to him between 1872 and 1878, he lost his battle with British industrial interests. His daughter, Lady Hope, was to write later:

All this was good for the trade of England; it has helped to spell ruin to millions of Indian homes, and has done its part in causing more acute physical suffering and mental pain among British subjects than have all the wars waged throughout the world since the nineteenth century dawned.<sup>19</sup>

Moreover, by interrupting the drainage system, the methods of railway construction contributed to the development of malaria and of

floods which, today, have assumed catastrophic proportions in east India. Technological choices in the flood warning systems have also been studied by R. Schware.<sup>20</sup>

Each technological choice has consequences for the poorest people or for national independence: railways instead of irrigation and navigation; the dieselization of the railway instead of the direct or indirect use of coal, of which India has vast reserves; subsidies for roads instead of railways; and so on.

In the context of the UNRISD-CRESSIDA 'Food Systems and Society' project, the connection between social system and technological choice has also been dealt with by S. Chakraborty as regards the tribal populations of east India<sup>21</sup> and, more specifically, in Orissa, by the anthropologist N. Patnaik, in relation to shifting cultivation.<sup>22</sup> Technological choices are also referred to by J. Harriss in connection with rice-growing in West Bengal,<sup>23</sup> while Barbara Harriss has analysed the whole system of processing and marketing rice in this state.<sup>24</sup>

## Food systems throughout time

We have already referred to the analysis of the development since 1950 of food production, food prices and the terms of exchange between agriculture and industry. Although direct taxes on land and agricultural activities have decreased considerably since independence, and although indirect taxes levied on the agricultural sector are still relatively low, a knowledge of changes in these intersectoral terms of exchange is of the utmost importance if we are to understand the nature of value transfers and of the accumulation and, more generally, the mobilization of resources. But examining these is difficult and gives rise to much controversy. The detailed study by B. Chattopadhyay and S. C. Sharma<sup>25</sup> concludes that between 1950-51 and 1975-76 the terms of exchange tended to favour agriculture. It should nevertheless be noted that, when the terms of trade change to the advantage of agriculture, not all farmers benefit: the poorest have to buy their basic foods at a higher price during the transition period, when there is usually a slackening, or even depression in the evolution of agricultural

wages. In Bengal, in the period between 1923 and 1946, there was a positive correlation between the trend favourable to agriculture in the terms of exchange and the sale of land by the poorest people.

An analysis of this type forces us to go further and examine the pressure groups which influence governmental decisions regarding the regulation of prices. Influential pressure groups—both industrial and agricultural—are not necessarily immediately and clearly aware of the advantages and disadvantages of governmental decisions for their medium- or long-term prosperity. They may not have enough information or analytical ability, and foreign interests (particularly as regards industry) may influence decisions in a direction opposed to the national interest. Doctrinaire ideas may confuse their perception. Aware of these methodological difficulties, B. Chattopadhyay and Aswini K. Ray (Professor of Political Science at J. Nehru University in New Delhi) have completed the text previously quoted in a study of changes in the membership of parliament (Lok Sabha), which concludes that the power of the big landowners, who are more numerous and more sophisticated, is increasing, and that of professional people is diminishing, while the industrial interests which were weakened during the Janata Government have since then regained strength.

But while, thanks to the Indian democratic system, we can give the reader an idea of the principal protagonists in the community and observe the changes in this category by referring to parliamentary debates (in New Delhi and in the states), and to material published by commissions and by the press, especially the publications of associations (for example, the Federation of Indian Chambers of Commerce and Industry), few such studies have been made, although they are essential to our understanding of the functioning of the food systems and, on a wider scale, of the economy. They call for detailed analyses, which bring less renown than theoretical treatises, and for close collaboration between economists, sociologists and political scientists, which is not encouraged by the systems of promotion in the universities nor by those of research.

As we have seen, analysis of the development of food production and food prices to

some extent entails an analysis of the impact of climatic fluctuations on production. It therefore requires the collaboration of economists and weather experts and, consequently, entails examining the choices made in agricultural technology (choice of species and variety in plant improvement programmes, choice of type of irrigation, etc.) which must be studied with the aid of specialists in the environmental sciences (geneticists, agronomists, soil scientists, hydrologists, geologists, and so on). Political scientists, sociologists and agronomists must co-operate in studying the planning of agricultural research and identifying priorities for it, and economists must collaborate by examining the distribution of resources, the allocation of investments and the organization of funds, on the basis of which these choices are made.

Without going into details about such research studies, we must note that analysis of fluctuations in food production (cereals plus food pulses) shows that they are increasing more markedly than the general trend, which is itself increasing. This divergence is disturbing, for two variations from the average which have the same absolute value but opposite signs do not have symmetrical effects: for example, the currency which has to be spent on imports in a bad year is obviously not compensated for by imports of currency in a good year. At both the national and the private level, it is difficult to adapt to a fall in income; some consumption habits persist. The effects of this asymmetry and rigidity are known as 'ratchet effects', because they are like the catch in a piece of machinery which prevents it from slipping backwards.<sup>26</sup>

Research on these questions, which is being carried out at national level, is being extended to the contrast in development between the north-west and the east of India, the object being to answer the vexed question which is the research team's main concern: why does the east of India not develop more rapidly? This question also concerns Bangladesh, for until independence, West Bengal and East Bengal (which became East Pakistan and then Bangladesh), suffered the same fate. When the final version of B. Chattopadhyay's study<sup>27</sup> is published, the multidimensional nature of the answers will have its place in the



Traditional agricultural technics: men-powered device for the irrigation of paddy fields, Madras, India (1956). G. Pourcher.

complex interplay of the cultural, social, economic, political and ecological factors, each situated in a different historical context: the long history of the two regions, one of which was constantly open to invasions whereas the other, in the east, was protected by natural barriers; the history of the very different colonial policies pursued in the two regions; and the history of the period closer to us, that of independent India. In this telescoping of time there is one crucial event: the famine in Bengal in 1943, the study of which has been reanimated by B. Chattopadhyay,<sup>28</sup> for to this day it acts as a focus for the theoretical, methodological, political and cultural questions which are still all too relevant. A point worth noting about the approach adopted is that it is not confined to the crisis period: based on a political economy of colonialism and using the concept of economic drain formulated by the Indian nationalists in response to the demands of their times, it sets this crisis in the period of inflation due to the war (1942–44) which itself followed an

inflationary movement that began in 1928. Moreover, it takes into account non-economic constraints which, contrary to a hypothesis often advanced, have not been eliminated by the commercialization of the economy.

The 1943 famine had consequences and sequels each of which has been the subject of research: famine codes,<sup>29</sup> the beginning of the setting up of the public system for the distribution for relief;<sup>30</sup> responses within the peasant movements and political parties in Bengal, which were studied in a previous project directed by B. Chattopadhyay and of which a study by Maitreyo Ghatak is available,<sup>31</sup> and lastly cultural reactions—for the 1943 famine left its mark on Bengali literature,<sup>32</sup> and on the graphic and plastic arts.<sup>33</sup> Whatever form it may take—that of popular songs, the poems of simple people, or more intellectual works such as those of Rabindranath Tagore, the giant of Bengali literature and the winner of the Nobel Prize for Literature in 1913; or novels, the outstanding quality of which is known to few



people abroad; or plays, the writing and the significance of which have been studied by B. Chattopadhyay and Rudraprasad Sengupta, a well-known actor and director; or films, of which only those made by Satyajit Ray are known outside India; or paintings, such as those of Somath Hore, which have been analysed with remarkable effect by the art critic and sociologist Pranabbanjan Ray<sup>34</sup> —the impression made by hunger and famine upon the people and upon art, which has left an indelible mark on Bengali culture, is evidence of a sensitive and intuitive analysis which interdisciplinary, scientific research should not neglect. Poets and writers are often better at understanding the deepest truths about society than specialists in the social sciences. The Bengali physicist J. C. Bose, to whom we have already referred, wrote: 'The consciousness of the scientist and the poet both go out in the search of the inexpressible one. The difference lies in that the poet ignores the means, the scientist does not.'<sup>35</sup>

## Food systems throughout the seasons

In 1981–82 the CRESSIDA survey workers recorded the following details for each family visited every month: movements, in money and in kind, of income and expenses, loans and repayments, economic and social activities, movements of food stocks, the availability of food for the family, and the family's state of health, especially that of pregnant women and of children.

The choice of families visited (approximately 9,600) was based on a complex statistical procedure, by drawing names at random in a population of 90,000 families (39,000 in Orissa, 51,000 in West Bengal). In West Bengal, 334 villages were chosen in 20 clusters of villages situated in 8 different districts. In Orissa, 415 villages were chosen in 22 clusters of villages situated in 10 different districts. The choice of districts and clusters of villages was made so as to obtain as representative a sample as possible of the combinations of natural surroundings (soil, climate, availability of water), of types of agricultural production system (systems aimed at the market or at food

self-provisioning, tea plantations, shifting cultivation, agro-forestry, fishing, and so on), of types of production relations and land structures (taking into account the relative proportions of the various categories of farmers, tenant farmers, agricultural workers), of social, religious and ethnic structures, of the dynamics of labour migrations, of the organization of marketing and transport, and so on. In the course of the year, 200 survey workers completed the socio-economic and medical questionnaires, with the help of 60 researchers in the various disciplines. Scientific and logistical arrangements were facilitated by B. Chattopadhyay's experience of the matter and by the expertise of one of the pioneers in Indian statistical surveys, S. Bhattacharyya.<sup>36</sup>

First, the results obtained were analysed, and on the basis of this analysis 10 of the 42 village clusters were selected (6 in West Bengal and 4 in Orissa) in which economic, ecological or institutional processes appeared to warrant more detailed study. This further study was financed by the United Nations Development Programme (UNDP). The families who had been visited in 1981–82 in these villages (approximately 2,500 households) were seen again in 1983–84, that is to say in a different agricultural year; by comparing them it will be possible to evaluate in particular the impact of climatic variation, which is part of the programme on the reduction of the vulnerability of food systems to climatic variations undertaken by the World Meteorological Organization, the United Nations Environment Programme, UNRISD and CRESSIDA. This programme also includes studies on the climate and on water management in east India, carried out by CRESSIDA under the direction of a meteorologist, B. L. Bose, and of a geologist who is a specialist in subterranean hydrology, S. S. Sarma,<sup>37</sup> and a study on the perception of natural risks by different socio-economic groups and on their strategies of adaptation.

The findings of such a large-scale survey are, of course, not yet available. But some information can be given about the findings of the rapid survey carried out on the 90,000 families visited in 1981. The detailed findings were published by CRESSIDA.<sup>38</sup> The questions related to the economic, social and medical status of the family. In particular,

people were asked for how many months cereal production could ensure self-provisioning if there were no sales. For the grain that has been harvested signifies both the time spent in working and future consumption. In societies where self-provisioning in grain plays an important role, as it does in West Bengal and in Orissa, the grain available at the harvest (after payment of the owner's share in the case of tenant farmers), is the measure of the time during which self-provisioning will be possible, the time of food security.

In the surveys which we carried out in Bihar at the beginning of the 1960s, we were able to judge the importance of this criterion, which the peasants themselves used to estimate their position and that of others in the economic strata of the local society. In this way they distinguished between those who had enough rice for all their family in all types of years, those who in good years hardly managed to meet their annual requirements, those who could meet half, a third, a quarter of their requirements, and so on.

We also carried out a few analyses of a more theoretical nature, using this criterion, which, of course, becomes less important as cash crops develop.<sup>39</sup>

Its use on a large scale proved worth while. Although it is not possible to calculate averages with any precision, on account of the statistical procedure chosen, the following figures are worth noting. Only 6 to 7 per cent of the 90,000 families think they may have a surplus. On the contrary, 31 per cent of the families in Orissa and 45 per cent in West Bengal are not self-provisioning in food: the vast majority of these, of course, are the families of landless agricultural labourers. Taking together all the families which have 0 to 6 months' self-provisioning, the percentages are 72 per cent in Orissa and 74 per cent in West Bengal. This means that almost three-quarters of the households must find the money they need to buy their basic cereals for half, or more than half, of the year. As cash crops are not highly developed in most of the villages chosen, the extra money comes from local agricultural wages, temporary migrations and the local credit system, which perpetuates the local authority's relations of domination over the mass of small peasants and agricultural labourers.

In these conditions, one can understand how difficult it is to reform agrarian structures. One can also understand that the technological choices made must be such as to ensure that those who have no land, or almost none, have work and purchasing power in all seasons, so that they enjoy better living conditions and are less dependent on the local structures of economic power. This is essential not only in agriculture: industry, which is dependent on agriculture, is also seasonal, as Sisir Mitra shows in his study of jute workers, only 54 per cent of whom were permanently employed in 1979 in the factory visited.<sup>40</sup>

The technological choices made in Indian agriculture after independence can be illustrated by what is taught and practised in one of the best Indian agricultural universities—that of Pantnagar in Uttar Pradesh, set up with scientific aid from the United States. The university's income derives in part from a huge seed production farm, which it manages according to what are believed to be the latest techniques, a perfect model which Indian farmers are encouraged to copy. It is worth noting that when the agricultural labourers at the university asked to be employed throughout the year instead of on a seasonal basis, so as to be able to live decently, they were told that the sound management of a modern farm did not permit of such luxuries. These agricultural labourers were only convinced by the force of arms, after dozens of them had been killed by the police who were called in by the vice-rector. If this is the model for modernization which is put before the entire country, seasonal hunger will not soon disappear.

Under the influence of the social sciences which have developed in the specific context of industrialization in Europe and the agronomic sciences which accompanied the development of agriculture in the industrial countries, the seasons and the years, which are part of the life of the poor in rural areas, are conveniently forgotten by theoreticians. To refer to them is to question the validity of a developmental model which works for a minority and to jeopardize the sciences which provide justification for that model.

Yet scientific research developed from observation of the seasons and the years, together with observation of the movement of

the sun, the stars and the clouds. Hindu calendars, which most Hindu peasants still use for their work and their festivals, have their origin in analyses made between 1500 and 1000 B.C. These calendars, which are based on the solar and lunar cycles, diverge from the Gregorian solar calendar every year; every three or four years they are adjusted so as to harmonize with the latter, by the addition of an intercalary month.

It is on the basis of this calendar that the Indian peasants carry out their own pre-scientific but intuitively systemic research. For generation after generation this calendar has provided a framework for their observations of the climate, nature, germination and flowering and animal behaviour and for their social and economic life. Scientists, in their laboratories and their offices, have another way of dividing up both time and reality. As long as their two worlds do not meet, that is to say as long as

they do not learn from each other, there is little hope of finding a rapid means of ensuring that all, the people of east India and many other regions of the world, can live and enjoy a better kind of life throughout the seasons and the years.

[Translated from French]

#### Editor's note

The first few pages of Pierre Spitz's article had to be deleted due to lack of space. The following paragraph summarizes the passages cut:

Scientific thought in the Indian sub-continent has a distinguished and ancient tradition, going back many thousands of years, and has made notable contributions in several fields, particularly astronomy, mathematics, physics and biology. In British India, this tradition of research in natural sciences developed further, through closer contacts with Europe, while modern social sciences started to emerge under the influence of the new circumstances prevailing.

## Notes

1. P. C. Joshi, 'Land Reforms. A Trend Report', *A Survey of Research in Economics, Vol. IV, Agriculture, Part II*, New Delhi, ICSSR and Allied Publishers, 1975.

2. P. Spitz, 'Silent Violence: Famine and Inequality', *International Social Science Journal*, Vol. XXX, No. 4, 1978.

3. *Famine-risk and Famine-prevention in the Modern World: Studies in Food Systems under Conditions of Recurrent Scarcity*, UNRISD, Geneva, June, 1976, 100 pp.

4. The only studies in this series published to date are: B. Chattopadhyay, 'Growth and Fluctuations in Foodgrains Output since Independence', *Ecoscience CRESSIDA Transactions* (Calcutta), Vol. III, No. 1, Summer, 1983; B. Chattopadhyay, S. C. Sharma and Aswini K. Ray, 'The Terms of Trade and the Rising Power of the Farm Lobby', *Ecoscience CRESSIDA*

*Transactions* (Calcutta), Vol. II, Special Issue, 1982. Others appear in B. Chattopadhyay's 'General Report' to UNRISD (July 1981) and have been used in P. Spitz, *Food Systems and Society in India—A Draft Interim Report*, Geneva, UNRISD, July 1983, 393 pp.

5. R. Garcia, *Nature Pleads Not Guilty*, Pergamon Press, 1981; R. Garcia and C. Escudero, *The Constant Catastrophe*, Pergamon Press, 1983; R. Garcia and P. Spitz, *The Roots of Catastrophes*, Pergamon Press, 1985. This analysis is based mainly on I. Prigogine's studies of dissipative structures.

6. J. Piaget and R. Garcia, *Psychogenèse et Histoire des Sciences*, Paris, Flammarion, 1983.

7. R. Garcia, *Food Systems and Society: A Conceptual and Methodological Challenge*, Geneva, UNRISD, 1984, 73 pp.

8. See for example K. C. Naik and A. Sankaram, *A History of*

*Agricultural Universities*, New Delhi, Oxford and IBH Pub. Co., 1972, which gives an account of the two Indo-American research and education missions (in 1955 and 1960) by the 1963 Committee on Agricultural Research, chaired by Dr M. W. Parker from USDA, and by the 1961 Committee on Teaching, known as the 'Cummings Committee', from the name of its president, Dr Ralph W. Cummings from the Rockefeller Foundation. This committee played a considerable role in the organization of agricultural universities in India which were not only built on the model of Land-Grant Colleges in the United States, but were linked through scientific co-operation agreements with six American universities, each of these universities being responsible for part of the area of India.

9. R. Pieris, 'The Implantation of Sociology in Asia', *International Social Science Journal*, Vol. XXI, No. 3, 1969.

10. P. Spitz, 'Industrie des Pesticides et Tiers-Monde', *Futuribles* (Paris), No. 60, November 1982.
11. I. Prigogine and I. Stengers, *La Nouvelle Alliance. Métamorphose de la Science*, Paris, Gallimard, 1979, pp. 58 and 60.
12. O. Sunkel, 'The Development of Development', *IDS Bulletin* (Sussex), March 1977.
13. A. Howard, *An Agricultural Testament*, Oxford University Press, 1940.
14. Four volumes, including one double one, have been published. The first two are entitled *CRESSIDA Transactions* (Vol. I, No. 1, Summer 1981, 232 pp.; No. 2, Winter 1981, 250 pp.); the others are entitled *Ecoscience, CRESSIDA Transactions* (Vol. II, 1982, special issue, Nos. 1 and 2, 382 pp., Vol. III, Summer 1983, No. 1, 234 pp.). Address: CRESSIDA, Chaturanga, 32 Govinda Auddy Road, Calcutta 700027. The four volumes will be referred to hereafter conventionally by the title 'CRESSIDA' followed by the number of the volume, the year and the number of pages.
15. S. Sen, 'Biogas Technology and its Prospects in Rural India, Using Human Waste as one of its Inputs', *CRESSIDA*, Vol. I, No. 2, 1981, 18 pp.
16. S. C. Chakraborty, 'Significance of Water Conservancy on the Interface of Poverty and Techno-culture in West Bengal', *CRESSIDA*, Vol. I, No. 1, 1981, 14 pp.
17. A. Biswas, 'The Decay of Irrigation and Cropping in West Bengal—1850–1925', *CRESSIDA*, Vol. I, No. 1, 1981, 22 pp.
18. B. Chattopadhyay, 'Sir Arthur Cotton's Advocacy of Combined Navigation and Irrigation as Alternative to Railways in India—a 19th-Century Controversy', *CRESSIDA*, Vol. I, No. 2, 1981, 10 pp.
19. Lady Hope, *General Sir Arthur Cotton*, Calcutta, Institution of Engineers, 1964 (reprint), quoted in B. Chattopadhyay, op. cit., p. 224.
20. See for example the CRESSIDA studies: S. C. Chakraborty and B. Chattopadhyay, 'West Bengal Floods: Natural Calamity?', *The Economic Times*, 13–14 November 1978; B. Chattopadhyay, 'The Sorrows of Orissa. A Decade of 'Natural' Calamities', *CRESSIDA Working Paper* No. 7, 1979; R. Schware, 'Flood Forecasting and Warning: the Social Value and Use of Information in West Bengal', *CRESSIDA*, Vol. I, No. 1, 1981; R. Schware, 'Official and Folk Flood Warning Systems: an Assessment', *Environmental Management*, Vol. 6, No. 3, 1982.
21. S. Chakraborty, 'The Tribals of Eastern India', *CRESSIDA*, Vol. II, 1982, 36 pp.
22. N. Patnaik, 'Shifting Cultivation in Orissa—Micro-study of Three Tribal Villages', *CRESSIDA Working Paper* No. 22, 174 pp.
23. J. Harris, 'Making out on Limited Resources: or, What Happened to Semifeudalism in a Bengal District?', *CRESSIDA*, Vol. II, 1982, 61 pp.
24. B. Harriss, 'Food Systems and Society: the System of Circulation of Rice in West Bengal', *CRESSIDA*, Vol. II, 1982, 93 pp.
25. B. Chattopadhyay, S. C. Sharma and A. K. Roy, 'The Terms of Trade and the Rising Power of the Farm Lobby', *CRESSIDA*, Vol. II, 1982, 23 pp.
26. See for example A. Smithies, 'Economic Fluctuations and Growth', *Econometrica*, Vol. 25, No. 1, 1957, pp. 1–52.
27. At present included in mimeographed form in B. Chattopadhyay's General Report to UNRISD (July 1981) and used in P. Spitz, op. cit., UNRISD, 1983.
28. B. Chattopadhyay, 'Notes towards an Understanding of the Bengal Famine of 1943', *CRESSIDA*, Vol. I, No. 1, 1981, 42 pp.
29. R. N. Nag. and P. Ray, 'Famine Codes: their Implications', *CRESSIDA Working Paper* No. 11, 1979, 34 pp. + annexes; N. Sengupta and P. Ray, 'Relief Manuals and Codes of West Bengal and Orissa: after Independence', *CRESSIDA Working Paper* No. 25, 1980, 22 pp.
30. See General Report by B. Chattopadhyay, op. cit., 1981 and P. Spitz, op. cit., UNRISD, 1983.
31. M. Ghatak, 'Peasant Mobilization in Bengal', *CRESSIDA*, Vol. III, No. 1, 1983, 39 pp.
32. M. Bose and T. Bose, 'The Bengal Famine in Bengali Fiction—An Attempted Analytical Model', *CRESSIDA Working Paper* No. 24, 1980, 32 pp.
33. P. Ray, 'Response to Famine in Visual Arts of Bengal', *CRESSIDA Working Paper* No. 4, 1979, 8 pp.
34. P. Ray, 'Hunger and the Painter: Somnath Hore and the Wounds', *CRESSIDA*, Vol. I, No. 2, 1981, 20 pp.
35. Quoted in A. Nandy, *Alternative Sciences, Creativity and Authenticity in Two Indian Scientists*, New Delhi, Allied Publishers, 1980, p. 57.
36. S. Bhattacharyya, 'The Rural Poor—Their Employment Condition and Level of Living', *CRESSIDA*, Vol. I, No. 1, 1981, 58 pp.

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37. CRESSIDA Physiography-Ecology Research Unit, 'The Geologic and Physiographic Framework of Eastern India', *CRESSIDA*, Vol. II, 1982, 17 pp.; B. L. Bose, N. Gupta and S. Panchadhyayee, 'Aspects of Utilization of Climatic Resources and Agricultural Strategies in Eastern India', *CRESSIDA*, Vol. III, No. 1, 1983, 46 pp.; B. L. Bose, 'Rainfall Probability over Eastern India', *CRESSIDA*, Vol. III, No. 1, 1983, 27 pp.
38. 'UNICEF-UNRISD-CRESSIDA Project: Household Enquiry in West Bengal 1981-82', *CRESSIDA*, Vol. II, 1982, 36 pp.; 'UNICEF-UNRISD-CRESSIDA Project: Household Enquiry in Orissa 1981-82', *CRESSIDA*, Vol. III, No. 1.
39. P. Spitz, 'Drought and Self-provisioning', in J. Ausubel and A. Biswas (eds.), *Climatic Constraints and Human Activities*, Oxford, IASA, Pergamon, 1980.
40. S. Mitra, 'Jute Worker, a Micro Profile', *CRESSIDA*, Vol. II, 1982, 35 pp.
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# Food-production systems in the Middle Valley of the Senegal River

Thierno Aliou Ba and Bernard Crousse

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The Middle Valley of the Senegal River, from Matam to Richard-Toll, is a region with unique characteristics.<sup>1</sup> Every year, from July to October, the river overflows its channel to cover an area the extent of which varies according to the greater or lesser abundance of the monsoon rainfall on the upper part of its drainage basin in Guinea and Mali during the preceding weeks. The depressions that are flooded in this way comprise two parts: *oualo*, land proper, and *fondé*, land. The part of the *oualo* known as *hollaldé* land always lies at a lower level than the areas containing villages; stretches of thorny shrub and forests, as well as the elevated ridges of *fondé* land which form the banks of the river, discontinuously separating it from the hollows of the *oualo*.

The rainy season overlaps extensively with this period of flooding. In a normal year, there is rainfall in the valley from June to August, making it possible to cultivate land called *diéri* which lies outside the flooded areas. The floods and the rainy season make up the winter season, while the rest of the year forms the dry season.

As is generally known, over the past ten years or so this region has been subjected to the repeated assaults of drought and desertifi-

cation. The rainfall of this Sahel region, which formerly ranged from 600 mm in the south-east to 300 mm in the north-west, has now declined to less than 100 mm a year in many areas. This has led to a corresponding decrease in the river floods. In 1983 and 1984 it was necessary to resort to the ultimate solution of damming the course of the river with an earth dam below Rosso in order to retain the water needed by the crops of the Middle Valley. Much damage has been done to the ecosystem as a result. Dunes have now reached the river itself, and sandstorms are increasing in frequency. Designated forests which had previously been preserved have had their cover reduced by over half. And survival for the people of the region entails much more effort. The food production of the Senegal Valley, formerly the granary (millet and sorghum) of Mauritania and Senegal, is now decreasing from year to year.

## Traditional agriculture

Sorghum is the primary traditional crop in the *hollaldé* areas of the *oualo*, while millet is that of the *diéri*. *Fondé* and *palé* land (the immediate slopes of the river banks) yield crops

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of *niébé* beans, maize, and a number of fodder plants and vegetables.

The usual estimate given for the total land surface area flooded and cultivated in an average year is of the order of 100,000 to 150,000 hectares. The year 1950 was particularly good, as the floods covered 180,000 hectares. The year 1972, which sounded the first serious warning note in the Sahel, was very bad, with less than 10,000 hectares flooded; 1984 was even more catastrophic, for although some areas were flooded, this was not sufficient for the land to produce anything significant. In an average year, the yield of sorghum grown after the flood has receded is estimated at 430–450 kg/ha, amounting a total production of between 50,000 and 60,000 tonnes.

It is difficult to give an estimate of the total area of *diéri* land, or rain-fed farmland. In a document which it published in 1982, the Organisation pour la Mise en Valeur du Fleuve Sénégal (OMVS) (the organization for the development of the Senegal River), gave an estimated figure of about 80,000 hectares of land under cultivation for very favourable years. In 1957, which OMVS used as its reference year, 79,600 hectares were cultivated and total production, at 300 kg/ha, amounted to 30,000 tonnes. In less favourable years, the total is barely 20,000 tonnes. In 1984 virtually all the successive crops failed not only in the Senegal Valley but also in a large area further south, near central Senegal.

The *diéri*, which because of 'the quality of the soil and the uncertainty of the rainfall, can produce only moderate yields and holds out only uncertain prospects of harvests' (De Chasse, 1977, p. 182), belongs, under the traditional system, to the people who clear and cultivate it. As unlimited quantities of this land are available, it is not subject to a strict, clearly defined system of landholding. The reverse is true for *oualo* land, which is limited to an area that is always the same and can never be extended, and is flooded to a greater or lesser extent depending on whether the floods are good or bad. It is thus hardly surprising that the customary land law governing the *oualo* is much more elaborate and coercive than the practices which obtain in the rain-fed crop-land of the *diéri*.

The arable land of the *oualo* is the collec-

tive property of the village. Under the traditional system, which is still very widespread, the distribution of plots of land among nuclear families (*foyré*) is carried out within the large village lineage groups, or *lenyol*. The oldest member of the lineage group shares out the *oualo* among the adult male descendants, and this usually takes place on the occasion of a wedding ceremony or when someone dies, with ownership of the land thus acquired lasting for life. Some land, however, is subject to redistribution each year. The traditional system also makes provision for the rental of land by individuals who do not belong to the lineage group. As Mamadou Wane has remarked, the land also belongs to God, and these farmers must ensure that the Muslims, who are all brothers in God, have access to the land on sufficiently stable terms to enable them and their children to live decently (Wane, 1978, p. 34). But at no time does the lineage group relinquish its right of ownership. Its land remains undivided, and no individual, not even the oldest member, has the right to alienate it permanently, in whole or in part, to a third party.

The purpose of all these mechanisms and precautions, in the traditional view, is to prevent the communal land from being subjected to a centrifugal fragmentation process which would make it impossible to administer. If fragmentation became the rule, the community's survival would be endangered, given the ever-present spectre of famine in this region on the fringes of the desert. In many ways the traditional pattern of land tenure is remarkably well suited to the environment, and also to the annual vicissitudes of flooding and rainfall. As the flooded area of the *oualo* could vary from year to year, each lineage group had at least a part of its land flooded and shared whatever harvest was obtained among its members. Thus, in good years and bad, each family was sure of harvesting something. The *diéri* land constituted an additional resource for those who wished to plant larger areas or to insure against a poor harvest on their *oualo* plots. Rent systems based on yield and farm size enabled tenants to feed themselves without being too cynically exploited by landowners, even in years of poor harvests.

The map (Fig. 2) on page 393 clearly shows

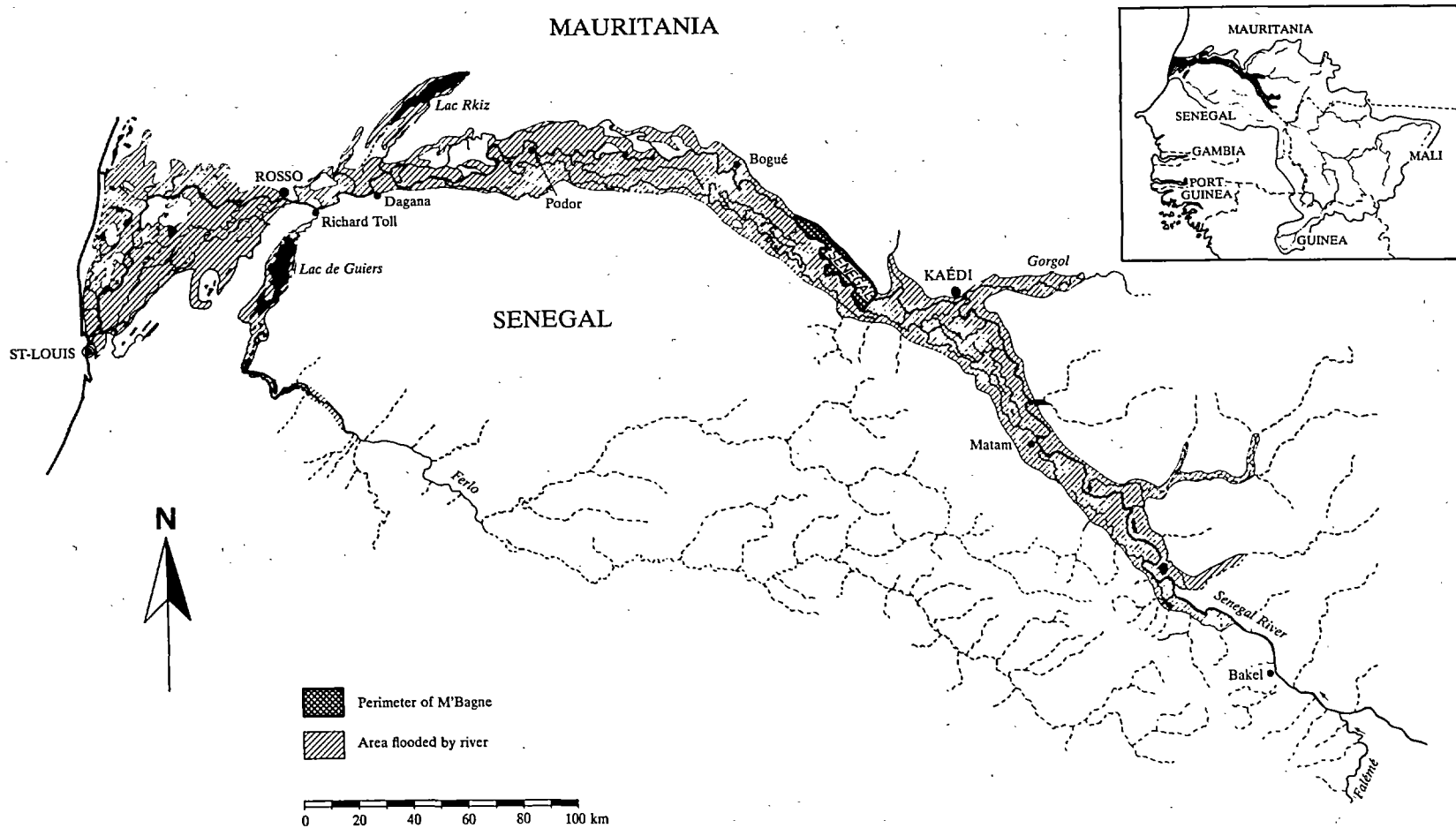


FIG. 1. Map showing the overall situation in the Middle Valley of the Senegal River from Matam to Richard-Toll. The irrigable areas of the valley and the M'Bagne area are shown.



how the flooding can vary in extent from one year to another. Thus the *oualo* situated in the M'Bagne I area of Mauritania, between Kaédi and Bogué, was not extensively flooded in 1979, but was more satisfactorily flooded in 1980. It should be noted that however poor the flooding is, as in 1977, the distribution of land among the lineage groups (Thiancadiol, Tipali, Willingara and the rest in the eastern part) ensures that at least a part of each group's territory is flooded. The Kaédi-Bogué road, which in theory is never flooded, marks the boundary between the *oualo* and the *diéri*. The latter lies north of the road. The lineage groups are careful to establish the boundaries of their lands as far as the road, that is, up to the furthest possible limits of the flood waters.

The villages are built on the riverbanks which are at a higher level than the *oualo* basin (Dioudé Dendémayo and DOUNGEL RÉO in Mauritania; Dioudé Oualo, DOUNGEL and Cascas in Senegal), on high ground near the *diéri* (Dioudé Diéri, Aéré M'Bar) or on the *diéri* itself (Aéré Golléré).

Smaller holdings begin to appear in the western part of M'Bagne I where, in contrast to the eastern part, the land belonging to the lineage groups does not form a single continuous whole. The fact that certain holdings in this part were flooded neither in 1979 nor in 1980 should not lead to the conclusion that the people farming them had no harvests. Land is distributed in such a way as to ensure that each lineage group and nuclear family has plots in various subdivisions and consequently in at least one of the subdivisions flooded in 1979 and 1980. Such a distribution is again the result of the traditional logic according to which the peasant farmers should have 'not a single large plot, but several small plots situated at different levels in the flood plain, an arrangement made necessary by the characteristics of flooding in the *oualo*, in order to be sure of reaping a harvest' (OMVS, 1980, B.I. 59). The fact that the lineage groups in the eastern part possess continuous territories does not make a similar distribution of chances impossible. In this case, however, the phenomenon is not discernible at the level of the subdivisions, as the distribution takes place within a continuous stretch of land.

Two pieces of enclosed village land situated in the *fondé* zone are to be included

in this M'Bagne I area. The first consists of 18 hectares and is situated near Dioudé Dendémayo, while the second is a 20-hectare stretch lying between Aéré M'Bar and the river.

Figure 2 also shows the most northerly arm of the Senegal River which forms the border between Senegal to the south and Mauritania to the north. This border is not ethnic in character, as the same families and the same lineage groups live on both sides of it. At this point in the valley, as at many others, it is estimated that between 10 and 15 per cent of the peasant farmers on each side have land rights or work on land situated on the other side.

### Irrigated agriculture

The productivity of agriculture in the valley depends not only on the traditional system and the vicissitudes of the climate but also on the introduction of new production facilities.

Since the end of the Second World War, and even more actively since the independence of Senegal and Mauritania in 1960, substantial development works have been carried out in the valley on the initiative of the three riparian states (Mali, Mauritania and Senegal) and under the direction of the international organization they have established for that purpose, l'Organisation pour la Mise en Valeur du Fleuve Sénégal (OMVS). Their objectives are as follows:

The construction of the Manantali and Diama dams in Mali and Senegal respectively, in order to regularize the discharge of the river at 300 m<sup>3</sup>/s and to stop the upstream movement of the tongue of salt water from the sea at Diama (23 km from the mouth of the river).

Permanent navigability of the Senegal for a distance of over 900 km from Kayes, in Mali, down the mouth of the river at Saint-Louis, made possible by the regularization of the level of the river.

The construction at Manantali of a hydro-electric power station with generating capacity of 800 gigawatt hours.

The production of irrigated crops on 375,000 hectares of land (240,000 in Senegal, 126,000 in Mauritania and 9,000 in Mali) out of the total area of 1 million hectares of the river plain.

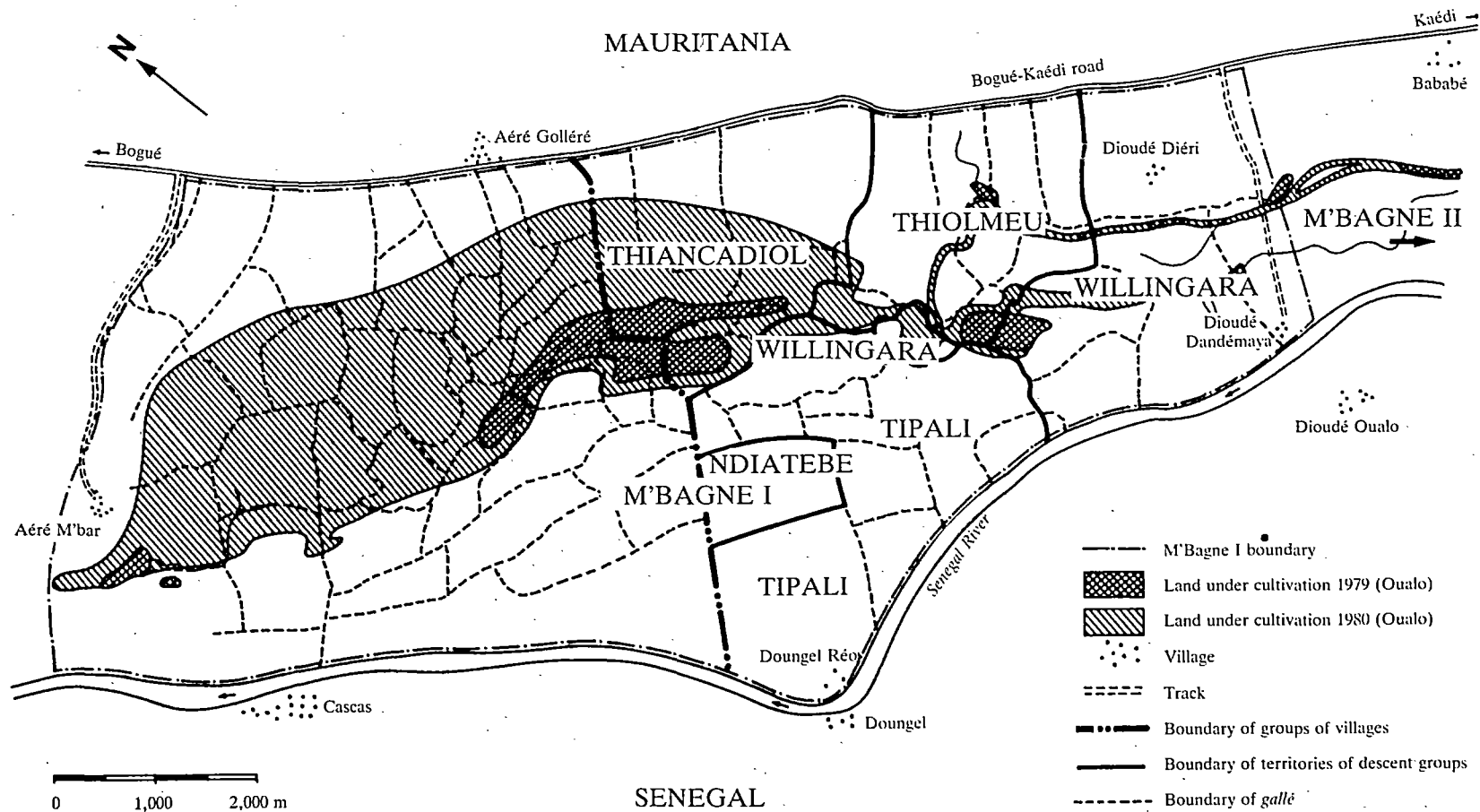


FIG. 2.

The development of crafts, industry, trade, housing and services.

The establishment of irrigated cultivation on a large scale is thus of crucial importance in the agricultural sector, and flood-plain agricultural land in its present form will disappear and be transformed into enclosed farmland. The initial primary objective was the intensive cultivation of rice in order to obtain twice-yearly harvests, but OMVS and the national organizations in charge of rural development (SAED and SONADER) have now made plans for the cultivation of other cereals in addition to rice: maize, fodder crops, vegetables and even irrigated sorghum in the enclosed areas. On the assumption of a 100 per cent increase in the 1970 population engaged in flood-plain agriculture, OMVS set itself, in its reassessment at the end of 1983, the objectives of providing all population groups engaged in flood-plain agriculture with access to irrigated land by 1990, making a plot of between 0.20 and 0.25 ha available to every member of the agricultural labour force (i.e. one person in two), attaining a minimum yield of 4 tonnes of paddy per hectare, and the harvesting of two crops a year. To convey a clearer picture of the situation, we may note that OMVS considers that if Mauritania should have 65,000 hectares (which amounts to only half of its irrigable land) under irrigation by the year 2000, it would be able to meet its own food needs and provide full employment for the rural inhabitants of potentially irrigable areas. This implies, of course, that those inhabitants, let alone the population of Mauritania as a whole, are far from self-sufficient in food at present.

At present, the land brought under irrigation and managed by the Société d'Aménagement et d'Exploitation du Delta et de la Vallée du Fleuve Sénégal (SAED) (the Senegalese agency for the development and management of the delta and valley of the Senegal River), including enclosed land adjoining villages, amounts to almost 25,000 hectares. To this must be added the almost 8,000 hectares of sugar-cane farms managed by the sugar company, Compagnie Sucrière Sénégalaise (CSS), at Richard-Toll, which keep the country virtually self-sufficient in sugar. Strictly private holdings of enclosed land (a subject to which we return below) cover 275 hectares scattered over 23 sites (July 1984 figures).

In Mauritania, enclosed areas under irrigation and managed by the Société Nationale de Développement Rural) (SONADER), the national rural development association, cover 5,500 hectares. Unmanaged areas of enclosed land and private holdings of enclosed land account for a total of 2,000 hectares distributed over 52 sites.

Although these achievements are considerable, the work has not kept up with the timetable established by OMVS. At the present expansion rate (2,000 to 3,000 hectares a year), experts estimate that it would require 100 years to bring all the land areas which constitute the target of the plan under irrigation (i.e. 375,000 hectares).<sup>2</sup>

### **An assessment of the food situation**

Can the valley, with both its traditional agriculture and the 'modern' irrigated farms, feed its inhabitants? Mauritania's total production of cereals at the beginning of the 1970s was 80,000 tonnes. This was adequate to feed 650,000 people at an individual consumption rate of 130 kg per annum. It effectively satisfied half the needs of the country during this period. It is estimated that the Mauritanian side, in a former good year, could produce 15,000 tonnes of flood-plain crops, 10,000 tonnes of rain-fed crops and 10,000 tonnes of crops in irrigated enclosed land adjacent to villages, making a total of 35,000 tonnes, and this quantity is adequate to meet the consumption needs of the farming population of the Mauritanian side. Estimating that population at 160,000 (GERSAR, 1980) and assuming an individual consumption rate of about 190 kg per annum, a level which is higher than the national average but is reasonable in such a rich area, a production figure of 35,000 tonnes is enough for self-sufficiency. But the Mauritanian side, whose Moorish name is Scemama, forms only a part of Mauritania which has a total population of 1.7 million. To the crops produced in the valley must be added those raised in oases, the produce of dry farming in other regions (in the south-east in particular), and the harvests gathered elsewhere from arable land around dams (for example, Mal

Lake). A total of 80,000 tonnes is reached if these crops are added to those obtained from the valley, but even then this only satisfies a third of the country's consumption needs (total demand for cereals is estimated at 240,000 tonnes). Even the figure of 80,000 tonnes for a good year is unrealistic, as in recent years production has varied between 30,000 and 50,000 tonnes, with the result that at least 75 per cent of the country's cereal consumption has had to be imported. Figures are lower still for 1984, the estimated total is 20,000 tonnes (6,500 tonnes for rain-fed crops, 6,000 tonnes for flood-plain crops, 6,000 tonnes of milled rice from irrigated enclosed farmland and 1,200 tonnes of maize). These figures were published by the Commissariat à Sécurité Alimentaire (the authority in charge of food security) in December 1984, at Nouakchott. At that rate, even if the valley were allowed to keep all its produce, it could satisfy only a third of its needs. This clearly shows to what extent the situation has deteriorated since the late 1960s, and it is understandable why the authorities should see intensively irrigated farmland as the only means of warding off the danger of famine.<sup>3</sup>

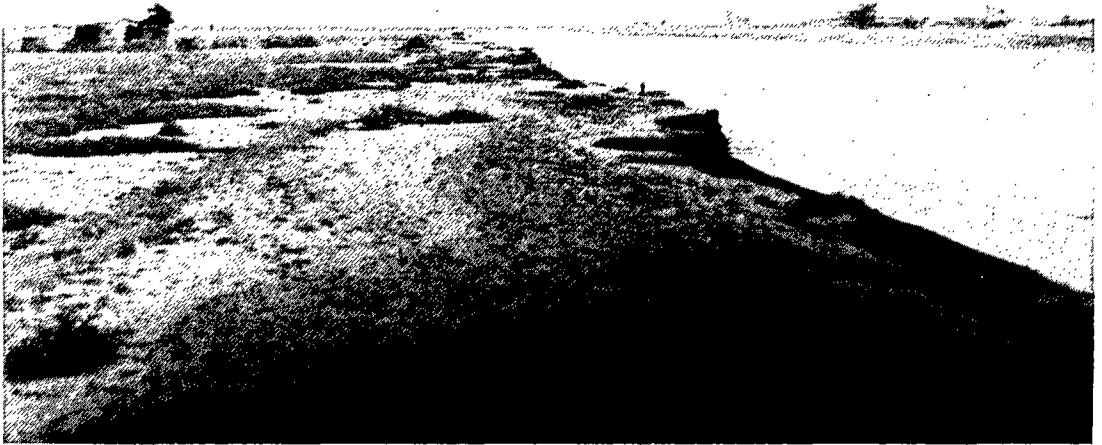
Cereal imports are obviously necessary in order to meet the remainder of the country's needs as regards cereals. In 1980 Mauritania imported 140,000 tonnes of cereals in the form of food aid and conventional commercial purchases. Rice accounted for 46 per cent of this total, maize 47 per cent, and millet and sorghum 7 per cent. Food aid in the strict sense amounted to 44 per cent of the total (SOLAGRAL, 1984, p. 107). After the catastrophic rainy season of the summer of 1984, the figure of 240,000 tonnes is mentioned on the basis of a per capita consumption of 150 kg.

Sorghum and millet are the staple diet of the sedentary rural population (and hence of the valley farmers), whereas the urban population (Nouakchott) prefer rice and wheat. Among the nomads, an increasing preference for rice and wheat in place of millet is discernible. In the long term, therefore, rice will tend to displace the traditional cereals. Accordingly, the present deficits in the traditional cereals actually foster the consumption of rice and wheat, which—unfortunately from this point of view—are the cereals most usually imported commercially or as food aid. This in-

evitably results in what is often denounced as the gradual habituation of population groups to imported cereals.

The figures for Senegal are more favourable. Food imports amounted to only 33 per cent in 1975, 1976 and 1977. It has to be borne in mind, however, that in contrast to Mauritania, Senegal has other agricultural regions—such as Sine-Saloum, Djourbel and Casamance—in addition to the valley, and this compensates for the poor harvests in the valley. On the whole, the results have been less than a resounding success, for whereas the population increased by 13 per cent between 1975–77 and 1979–81, production increased by only 10.4 per cent. During the same period, there were increases of 28 per cent in commercial imports and 60 per cent in food aid (SOLAGRAL, 1984, p. 110). The projected tonnage figure for the 1984–85 harvest is higher than that for Mauritania. It must be borne in mind, however, that there is four times as much irrigated land, that *oualo* land is also more extensive, and that there are more mouths to feed on the Senegalese side (which has between two and three times the population of the Mauritanian side). The Senegalese side is thus contributing, at present, to the increase in the country's food deficit, and to Senegal's dependence on the outside world for commercial imports and food aid in the strict sense.

The picture which has been drawn thus far of agricultural activity in the Middle Valley applies essentially to Tukulor villages and, to a lesser extent, Moorish ones. The extent of the deterioration of climatic conditions in the north has been such that many groups of Fulani and Moorish herdsmen now either live permanently on the right bank of the river, or even cross over to the Senegalese side or emigrate to regions still further south. Many of the Fulani have now taken up agriculture, and although livestock is still kept, the great herds of times past are now no more than a memory. Formerly, they maintained satisfactory complementary relationships as stock-breeders with the sedentary farming population, because the two groups were present together in the same area only for a few months each year during the transition between the dry season and the rainy season. This is no longer the case. The sedentary population now deny them



The upper part of the Senegal River, near Cascas, at the beginning of the dry season. The *fondé* land of the banks with scanty vegetation can be clearly seen. Crousse, 1980.

access to the land in many areas, because the sedentarized herdsmen do not recognize their traditional property rights. There have been increasingly frequent conflicts over the passage of Fulani cattle to the river or to water holes. The Moors, who with their exodus to the south have lost their traditional tribal lands, are finding it even more difficult to adapt to these new conditions of life.

Thanks to the presence of Fulani and Moorish herds in the valley, its inhabitants can obtain appreciable quantities of food resources (meat and milk from cows, sheep and goats). Despite the measures taken by the government, the herdsmen continue to cross the river to sell their herds in Dakar and elsewhere in Senegal. To check this practice, the authorities have placed great hopes in the development of irrigated fodder crops in certain parts of the enclosed farming areas, in order to keep the flocks in Mauritania and ensure that the meat is

sold in the country; some of it might even be exported. However, despite capital investments such as the slaughterhouse at Kaédi, the results obtained to date have hardly been convincing.

For the sake of completeness, we must add the resources of fish, poultry and certain local fruits. Fishing was formerly a very productive activity which has now declined almost to vanishing point as a result of overexploitation and deteriorated environmental conditions (the lack of flooding in certain years means that there are no flood-covered shallows where the fish can reproduce and feed).

Market gardening has made appreciable progress in the past few years. It can be carried on, provided some water is available (from pumps, wells or rainfall) in the *diéri*, on the *fondé* land along the riverbanks, or near marshland (*palé*) in the *oualo* itself.

The farmers have to use money to buy whatever food items are felt to be in excessively



Remnants of a protected forest along the Mauritanian side of the Senegal River, below Vinding. Crousse, 1980.

short supply. This money comes from relatives who have emigrated to the country's large cities or to Europe, from retirement pensions from the colonial period, from the sale of part of their harvests for cash, or from payments received for certain services. At present, it is unquestionably those financial resources which are keeping the valley from succumbing to famine and permanent stagnation.

### **Prospects for the valley: land laws**

The valley is now torn between two distinct types of agriculture: on the one hand, irrigated farming is not yet carried on on a scale adequate to ensure food self-sufficiency; on the other, traditional farming is still indispensable given the present state of affairs.

It is in the context of this rather uncertain intermediate situation that many matters relat-

ing to the organization of agriculture and the participation of the population groups concerned come together and sometimes clash.

One of the most influential factors affecting this interplay of forces is without doubt the land laws. This final section of our study will be devoted to a survey of some of their main provisions.

On the left bank, the Senegalese Government's 1964 law on public property, which made the non-use of land a punishable offence, has undoubtedly encouraged the rise of individualistic behaviour which is at variance with traditional solidarity.<sup>4</sup> This law (No. 46/64) gave the state ownership of all public land 'in order to ensure its use and rational development' (Article 2). The old traditional rights pertaining to this land were abolished, with the exception of the rights of the effective occupants and users of land in rural economic areas (that is, land regularly used for rural dwellings,

agriculture, and stock-breeding, Article 7), which are recognized by the new legislation (Article 15). Almost all the agricultural land in the region lying near the river, with the exception of the designated areas of the delta and a few large areas of enclosed land (pioneer zones), thus consists of rural economic areas.

Individuals, de facto associations, co-operatives, and agribusiness associations may be permitted to use land in rural economic areas, provided they apply in due form to the rural councils which are elected in each rural community. The primary criterion for assessing such applications is the ability of the applicant to make productive use of the land.

In the case of the rural communities of Mbane and Ross-Bethio near Guiers Lake, Mathieu (1984) states that

land use applications are submitted, in 20 per cent of all cases, by people from outside the area, and a very substantial number of applications also come from people whose primary occupation is not farming (carriers, traders, marabouts, retired civil servants, SAED or CSS technicians) or members of the local rural aristocracy: village chiefs, heads of co-operatives.

In the areas of Podor and Matam, the year 1981 saw the first

appearance of a growing number of small private irrigated enclosed farms, measuring between 2 and 7 hectares, on *fondé* land. There are now at least 16 private enclosed farms with a total area of almost 100 hectares, and most (80 per cent) are established by former 'lords of the land' on land which traditionally belongs to lineage groups.

Once the traditional rules of the game applying to land are modified by the state, Mathieu (1984) continues:

all the features which gave the old system its flexibility and genuinely communal character (hiring and lending of land) now become risk factors for the former lords of the land: a real risk of losing the land on loan if the beneficiary refuses to give it back by virtue of the new land (there have been some cases of this); the risk of losing prestige and symbolic power through the dissolution of the relationships of clientage and dependence on which the local hierarchy is based. These are the risks which are responsible for a stiffening in the attitudes of landowners and a decline in the incidence of the lending and renting of land.

At the same time, some forward-looking strategies are appearing, based in particular on the following points:

An assessment is made of the prospective appreciation of a given piece of land after a dam has been built, thus ensuring uninterrupted irrigation by pumping.

With this in mind, the prospective operator secures certain land for himself under the new law before others do so or become aware that the land in question is lying idle and decide to develop it themselves (a strategy that is known to have been adopted by SAED in some areas).

Applications are submitted for certain types of land which is not regularly worked (as in the case of some *fondé* land), but which it is desirable to acquire to prevent its being taken over by a development agency such as SAED.

This capacity to anticipate shows that the innovatory character of the law on public property, with all the possibilities it affords, has been clearly understood and retained by the population. It thus appears that the population in question has proved adept at grasping the implications of innovation in this sphere and turning them to its own advantage in a relatively short space of time. This, it need hardly be said, belies the reputation for passiveness and slow-wittedness that has sometimes been attributed to Africa's peasant farmers.

The application of the law on public property has resulted in a more 'fragmented' type of land management than before. Initiatives originate independently from a number of different points—as many, in fact, as there are operators. Objectives and strategies, be they agricultural or economic, are often divergent. The law on public property and the law on rural communities have not established any machinery for consultation between farmers comparable with the machinery that functions under the traditional system, despite the faults and inequalities of the latter. As a result, particular products may be over-produced at a given time when market conditions are favourable (the operators may all grow tomatoes, for instance), or not available at all because no one has planted a particular type of cereal or vegetable.

The new economic attitude now taking hold, added to the difficult climatic conditions,

has also meant that peasant farmers have become very calculating as to what crop can best constitute a source of income. At certain periods a given crop is preferred because it is more profitable and is free of risk. These choices bear little relation to the satisfaction of real demand, and still less to potential demand. In a good year, farmers usually begin by producing the necessary subsistence crops and then raise whatever cash crops will be the most lucrative.

The people of Mauritania had a different administrative experience. After independence in 1960, no legislation similar to Senegalese law on public property was enacted. It is only in recent development projects such as those of Kaédi and Bogué that elements of modern law which differ from the traditional system have been introduced. For instance, these projects have instituted other forms of solidarity and responsibility which can be summed up in the following terms: to each individual, his land (rather than to each lineage group or family as hitherto), the farmers all have plots of the same size, and a farmer who fails to farm his plot is dispossessed of it after two to three years of inactivity.

The peasant farmers are usually torn between two attitudes: the hope that they will, in a very short space of time, enjoy adequate facilities to enable them to overcome their present difficulties, but also the fear that they may fall victim to the same vicissitudes being experienced by their compatriots on the irrigated enclosed farms which have already been established. Each year, the operation of the enclosed farms of Bogué and Kaédi, to cite only two examples, is jeopardized for reasons having to do with the land, with 'conservative' and 'progressive' attitudes in contention. In Kaédi the former landowners are making efforts to preserve the old structure of land distribution and are opposed to the land developers and administrators. Conversely, the peasant farmers are all in favour of the new policy and have adopted independent attitudes towards these traditional former landowners.

The delays that have occurred in the execution of certain feasibility studies, and the repeatedly postponed start-up of a number of irrigation schemes no doubt increase still further the discouragement and scepticism of farming population groups. They then react by becoming more attached to the land—which they see as their only remaining reliable source of wealth—and this attachment strengthens the traditional system of landholding. On 5 June 1983, a decree concerning the reorganization of public and private land was issued in Mauritania. It abolishes the traditional system of land tenure, while respecting the previously existing collectively acquired rights of individuals (and not lineage groups) who have participated in the work of bringing land into production. It grants concessions to people who can prove that they possess the means to put the land to productive use. It also makes individual holdings lawful. A village or lineage group cannot stand in the way of individuals wishing to adopt that approach. But if there is general agreement in a village, a co-operative formed by all the people entitled to individual holdings can assume management of all the land. Ingenious though this decree undoubtedly is, there is reason to suspect that it may tend to favour the rich at the expense of isolated or impoverished villages, as has been the case in Senegal, and that certain notables may be seeking to use it in order to justify their traditional property holdings under the cloak of modern law.

We cannot at present foretell what the precise course of future events will be. The forces that have been set in motion in Senegal and Mauritania are very complex and should be analysed stage by stage as time goes on, in order to avoid the changes of hasty judgements and dubious generalizations. The task of the scientific investigator is thus clearly defined in this co-operative attempt by all people of goodwill to secure for the inhabitants of this region a greater quantity of food and a greater degree of well-being.

*[Translated from French]*



## Notes

1. The Middle Valley is populated principally by Tukolor, who call this region Fouta-Toro or simply Fouta, and by Moors and Fulani. This study does not deal with the problems affecting the Delta, nor with those of the Upper Valley in the Soninke country and Mali.

2. Lack of space prevents us from giving the necessary description of the great changes brought about in the traditional behaviour of the valley's farmers by the introduction of irrigated agriculture. Both techniques and planting times are different. The peasant farmer, who is very astute in certain respects as he is involved with more lucrative operations in other areas, sometimes devotes too little time and care to his irrigated farm, an approach which is unlikely to result in optimum yields from the latter and may even be detrimental to its everyday functioning. Moreover, an irrigated farm is a delicate mechanism which easily breaks down when inputs (fertilizers), fuel

oil or spare parts for repairing pumps are late in arriving.

3. Rice produced in the valley costs more than imported rice (in Senegal, about 120 CFA francs per kg compared with 70 CFA francs per kg). To justify the continuation of the irrigation schemes, the governments concerned put forward reasons of national food self-sufficiency and a variety of socio-economic considerations, such as maintaining population and employment in the valley.

4. Unquestionably, individualistic types of behaviour, linked to a certain form of speculation, are increasingly observable in Senegal and Mauritania. A revealing indicator is the large number of private enclosed farms that are established each year. They are profitable to individuals who have the power and resources to install irrigation facilities. A gap is now appearing between such individuals

and persons who are either unable or have no desire to do likewise. The governments concerned are clearly pinning their hopes on the former, expecting the rest of the population to follow their lead. But a question which is already being asked is how to avoid the rapid proletarianization and pauperization of those people who are not 'up front', and how to associate them in a dynamic, creative and egalitarian manner with the development process. For optimists, what has been done to date represents nothing more than initial attempts; in the view of pessimists, the die has already been cast and the valley will inevitably be taken over by a form of capitalism controlled by the notables. As a result of climatic conditions, people working enclosed farms were virtually the only ones able to produce cereals in 1983 and 1984. This has generated a monopoly effect and an accumulation of income that may permanently disrupt the traditional system of production.

## References

- BA, T. A. 1982. Formation et développement en milieu rural sénégalais. Restitution d'une pratique sociale et professionnelle à travers les centres d'expansion rurale, 1969-81. Lyons, Université de Lyon II (Diploma of Advanced Studies in Social Practices thesis).
- CROUSSE, B. 1984. Logique traditionnelle et logique d'État. Conflits de pratiques et de stratégies foncières dans le projet d'aménagement de M'Bagne en Mauritanie. *Dossier des contributions reçues au Colloque international de Saint-Riquier sur les pratiques foncières locales en Afrique Noire*. (To be published in *Espaces disputés*, Paris, Karthala, 1985.)
- DE CHASSEY, F. 1977. *L'étrier, la houe et le livre, 'Sociétés traditionnelles' au Sahara et au Sahel occidental*. Paris, Anthropos.
- GRUPE D'ÉTUDES ET DE RÉALISATIONS DES SOCIÉTÉS D'AMÉNAGEMENT RÉGIONAL (GERSAR). 1980. *Schéma directeur des aménagements hydro-agricoles de la Vallée du Sénégal. Rive droite en Mauritanie*. (Dossier A, les données de base, 3. — le contexte humain et économique.)
- LE BRIS, E.; LE ROY, E.; LEIMDORFER, F. 1983. *Enjeux foncières en Afrique Noire*. Paris, ORSTOM/Karthala.
- MATHIEU, P. 1984. Stratégies foncières paysannes et agriculture irriguée dans la Vallée du Fleuve Sénégal. *Dossier des contributions reçues au Colloque international de Saint-Riquier sur les pratiques foncières en Afrique Noire*. (To be published in *Espaces disputés*, Paris, Karthala, 1985.)
- OMVS (ORGANISATION POUR LA MISE EN VALEUR DU FLEUVE SÉNÉGAL). 1980. *Étude socio-économique du bassin du Fleuve Sénégal*. 7 vols. Dakar. (Typed temporary edition.)
- SOLAGRAL, 1984. *L'aide alimentaire*. Paris, Syros.
- WANE, M. 1978. Réflexions sur le droit de la terre toucouleur. Paris, Laboratory of Legal Anthropology, University of Paris I. (Mimeo.)

# Caribbean peasantry in the confines of the plantation mode of production

George L. Beckford

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## Introduction

Caribbean agriculture is still based on structural foundations established by the slave plantation system that existed from the sixteenth to the nineteenth centuries. In that system, African slaves provided the labour; the Caribbean provided the land (which Europeans had conquered from the indigenous Amerindian peoples); and Europe furnished venture capital and management.

Slave plantation economy produced export staples, sugar in particular, for sale in European markets. And the accumulated surpluses from that activity helped to build up European economy. On the slave plantations, slaves were accorded 'provision grounds' on which they produced foodstuffs for their own consumption and for sale in Sunday markets. And Maroons (run-away slaves) established independent subsistence production in their isolated mountain settlements.

Slave 'provision grounds' and Maroon food production were the precursors of peasant agricultural activities after Emancipation came in the mid- to late-nineteenth century.<sup>1</sup> In the larger and more mountainous colonies, the ex-slaves were able to secure land and establish viable peasant communities which gave them the potential of being independent of the plantations. On the other hand, in the smaller

islands where plantations had engrossed all the arable land, the ex-slaves had to continue working as wage labourers on the plantations.

The Caribbean peasantry practised diversified farming activities. They produced domestic food supplies and engaged in export production as well. Indeed, they introduced new export crops while the plantations continued with the monoculture of sugar. But the shortage of available arable land circumscribed what they could, in fact, achieve. Some indeed made a breakthrough but the majority did not. And so there emerged three distinct categories of peasant producers.

'Small' peasants are the majority of farmers today. They do not have access to sufficient good land to utilize family labour fully and generate enough income for living. Accordingly, they must engage in other occupations—wage work part-time, or own-account artisan activities of one kind or another. They are, therefore, characteristically multi-occupational and in the majority of cases part peasant and part rural proletariat. Yet these small peasants are the main source of domestic food supplies. Small wonder, then, that Caribbean economies have to rely excessively on imported food supplies.

'Big' peasants have more than sufficient good land to depend solely on family labour. Although the family provides the major labour

input, this class of peasant is able to hire wage labour on a systematic basis, thereby securing reasonable levels of living. Typically, big peasants concentrate on export crops with domestic food production as supplementary activity.

'Middle' peasants have sufficient land to derive a livelihood solely from farming and fully engaging family labour. But at peak labour demand periods in the production cycle—especially land preparation and harvesting—there is need for supplementary hired labour. More often than not, this hired labour is engaged on a 'piece-work' or task basis, in contrast to the time-wage regime of the big peasants. Middle peasants generally combine export and domestic food production, and they are significant producers of the latter.

Both small and middle peasants engage in free labour exchanges involving co-operative work on individual farms at peak points in the production cycle. This work rotates each day from one farm to another, with the host farmer providing a substantial meal and alcoholic beverage ('white' rum) at the end of the work period. This practice—'morning sport', 'day for day', etc.—has declined in importance in more recent times. But it is still of significance in most islands.

From the brief descriptions above, it is obvious that Caribbean peasantries are still locked into plantation-dominated export production. It is mainly the small and middle peasants who provide the bulk of domestic food supplies. But this output is constrained by the shortage of land available to these producers. This is further aggravated by the fact that finance capital (credit), technology (knowledge from research), and adequate marketing arrangements are generally unavailable for peasant production.

Contemporary Caribbean rural economy and its supportive food producing system display certain structural characteristics deriving from its historical roots in slave plantation economy and society. And the resulting peasant-plantation conflict is the source of rural poverty. As well, it is the foundation for the underlying disarticulation of these largely rural economies, characterized by a concentration on staple crop exports and extreme dependence on imported food supplies. They are described as

economies which produce what they do not consume and consume what they do not produce.

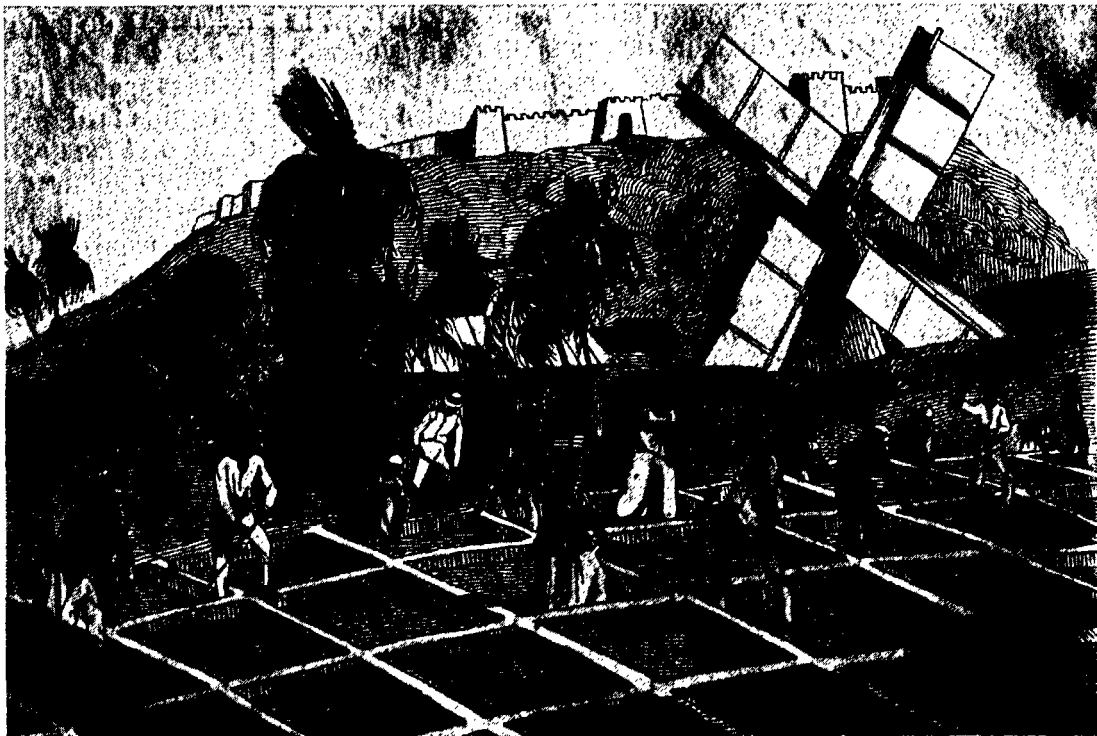
In the rest of this article, the focus is on the British West Indian experience. But the burden of the argument applies throughout the region (excluding socialist Cuba) with only minor modifications.

## The struggle for resource inputs<sup>2</sup>

The thesis which we want to advance in this article is that up to the present time, the development of the peasantry in the West Indies is circumscribed by the existence of the plantation system. As indicated earlier, this has been the pattern ever since emancipation of the slaves created the base for the emergence of peasant producers. In spite of the considerable changes in the social, economic and political order, the problems of peasant development remain inextricably bound up in a framework of institutional relations not far different from that which existed during the slave plantation period.

In this section we hope to demonstrate that the stranglehold of the plantations has served to limit the accessibility of resources to the peasants and that as a result, the present-day situation still reflects a struggle by the peasantry to break through an institutional setting that is biased toward its stagnation.

Jamaica is used as a case-study in this exercise even though in a sense, it is not representative of many of the territories. But it is instructive to look at this particular case because the opportunities for peasant development have been greater there than for elsewhere in the region. For one thing, land was available for peasant settlement even if this land was not of the best quality. For another, government policies directed towards peasant development have been more advanced than in the other territories. If it can be established that peasant development has been limited in this case—notwithstanding the advantageous conditions—then it would be reasonable to assume that the fortunes of the peasantry in other territories must have been worse, or rather, could not have been better. Some effort will, however, be made to relate the Jamaican



A Caribbean sugar cane plantation, nineteenth century. Maltaverne/Explorer.

experience to that of the rest of the region in the summing up.

In nearly 150 years since Emancipation, the Jamaican peasantry has not managed to secure much of the country's agricultural land and other resources. What little they have achieved can hardly be maintained in the face of continuing stiff competition from the plantations. In spite of attempts by government to provide assistance in recent decades, incremental agricultural resources tend to flow towards the plantation sector, and the peasantry has been forced to seek possibilities for advancement through migration and/or wage work on plantations. Thus the situation has reverted to very much the same pattern that existed just after Emancipation.

### Land

The distribution of land in farms in Jamaica shows a very unequal pattern—farms of under

5 acres in size (constituting the bulk of the peasantry) represent 71 per cent of all farms in the country but together they occupy only 12 per cent of total farm acreage. On the other hand, plantations represent less than 1 per cent (0.7 per cent) of all farms; yet these occupy 56 per cent of total farm acreage. When account is taken of differences in the quality of land in the two sectors, the situation is even more grossly unequal. For whereas the plantation lands are usually flat and fertile, peasant lands tend on the whole to be hilly, rocky, and inaccessible. In a recent exercise, for example, A. Norton and G. Cumper found this generalization to be valid. Using census data, the authors began with the following premiss:

the geological boundary of the alluvial (sedimentary) deposits has been taken as the approximate limit of the areas in which large-scale, or plantation, cultivation is likely to occur. . . . Small-scale agriculture is practised throughout the island, but it is in the less favourable areas such as the lower and less precipitous of the hill

slopes and in the river valleys, where these are accessible, that it is the main economic activity.<sup>3</sup>

The authors found a distinct correlation between peasant and plantation types in accordance with the geographic regions as defined above.

It merits repetition that this situation exists in spite of relatively intensive attempts by government to assist the settlement of peasants. Government land settlement schemes were first developed and have proceeded further in Jamaica than elsewhere in the West Indies. But these schemes have been limited by the fact that land which became available for settlement was what the plantations no longer required for their own use or alternatively, was mountainous Crown Land, previously in forests. Usually, it was the least viable plantations which sold out to the government and their viability was not unrelated to the quality of land. Where plantations disposed of a part of their holdings, it was also the most marginal areas which were sold. P. Redwood has estimated that of all the land settlements launched by government between 1929 and 1949, only 4 per cent were situated on the most fertile soil type (alluvium).<sup>4</sup> The government programme also encouraged the establishment of under-sized farms. The politics of settlement dictated that each property acquired be divided between as many people (votes) as possible. Thus, we find that:

about fifty per cent of the land holdings on the settlements are less than four acres in size. One direct consequence of these uneconomic holdings has been to force the farmer to find 'outside work' . . . it is estimated that thirteen per cent of the settlers under these schemes supplement their income by seasonal work and as many as twenty-four per cent in regular part-time work.<sup>5</sup>

The position of the peasants in respect of land has varied over time, depending on the fortunes of the main plantation crop—sugar—and on demographic factors. So long as land (of whatever quality) was available and the fortunes of sugar not very bright, the peasants continued to drift from the plantation lowlands into the mountainous backlands. Such was the case until about the 1930s. But in more recent decades it appears that this trend has been reversed. In a 1954 study of one of the major plantation parishes, for example, G. Cumper

discovered 'a considerable local migration from the peasant areas of the parish into the cane lands' which he attributed to two factors: the rationalization of the sugar industry and its rising fortunes since 1938 and the limited absorptive capacity of the infertile peasant mountain areas in the face of expanding population.<sup>6</sup>

In a more recent survey of land and population in the sugar belt of Jamaica, Alan Eyre noted that:

There are . . . populous centres which are entirely rural. These are associated with zones of small-scale subsistence farming on the periphery of the cane zone. The important fact about these centres is that while their 'subsistence' area has decreased or remained static, the population has in many cases more than doubled. . . . Some of these peripheral centres have so increased in population that there is not the slightest possibility that without massive depopulation they can ever again be considered basically villages of subsistence farmers. . . . It is quite clear that the nature of these erstwhile 'subsistence' districts changed rapidly as they became increasingly hemmed in by expanding capitalized large-scale monoculture.<sup>7</sup>

Thus it appears that although in the earlier period there was scope for peasant expansion in the mountainous interior of Jamaica, more recently these opportunities have become increasingly restricted with the growth of population in these areas. Shortage of land is, therefore, likely to continue to constrain development of the peasantry as long as plantations remain entrenched on the best available land.

### Labour

So long as there is a shortage of land for peasant expansion, plantations are able to secure the labour services of peasants at relatively low wage rates. With the expansion of population on a limited land base, the tendency has been towards smaller and smaller average farm sizes in the peasant sector. These small farms are not of a size sufficient to utilize fully the labour of the peasant and his family or to generate sufficient income to sustain them. Consequently, the plantations have an advantage over peasant farming even in securing the labour services of the peasants (whenever it needs them).

More generally, plantations have a distinct

advantage over peasants in so far as they compete for hired labour in the market. First, the more advanced techniques of the plantations result in a higher labour productivity making possible the payment of higher wage rates. Secondly, employer-employee relations tend to be more impersonal on plantations than on small farms. Thirdly, plantations provide a greater volume of work than any individual small farm. As a result of these considerations, peasants have great difficulty in attracting hired labour unless they follow patterns set out by the plantations. The closer peasants are located to plantations, the greater the influence. In a field survey, for example, M. G. Smith found that

small settlers located in or near to an important property or estate area, tend to adopt the estate patterns of task, piece or job work; and that labourers faced with the competing alternatives of rural small farm, estate, and urban or semi-urban employments, shift away from the former towards the better paid or more regular employment.<sup>8</sup>

The same report indicated that even where small settlers are capable of paying wage rates equal to or greater than plantations near to them, labour is likely to be more available to the latter on account of the greater amount of work offered.<sup>9</sup>

As with land, so with labour, peasants are unable to secure adequate supplies of these resources because the plantations have such a commanding position resulting from historical and other factors. This pattern remains basically the same for other resources not yet considered.

### Capital and credit

Plantations came to be established in the West Indies as a result of metropolitan (European) capital and enterprise. The West Indies became essentially satellite economies of Europe with the establishment of many institutions geared to maintaining this link. Thus, for example, plantation enterprises in the West Indies can draw on their metropolitan parent companies for financing. In addition, the banking system which developed was directly geared to the financing of plantation production and the associated import-export trade. At most times, therefore, the plantations have been able to

secure sufficient credit for whatever capital expansion was contemplated. Peasant producers, on the other hand, have had very limited access to outside financial capital and have had to rely almost exclusively on their own limited savings and personal loans from friends and/or relatives. Even in more recent times when governments have attempted to provide credit assistance, this was either insufficient or too heavy in the demands it made on the peasants, particularly when it involved the surrender of land title as a security for loans.<sup>10</sup>

In Jamaica where sugar is the main plantation crop, one study revealed that 'despite the greater contribution made by agriculture other than sugar cane to the gross domestic product (GDP), commercial banks have accommodated sugar agriculture to a greater extent than all other agricultural products'.<sup>11</sup> More generally, Clive Thomas (1965) has shown that expatriate firms engaged in export production have the most ready access to sources of finance among all areas of economic activity in the West Indies.

These firms are able both to provide the security expected while at the same time they only require credit for short periods, e.g., between crops. It must be recognized that these firms can also call upon two other sources of short-term accommodation. They can borrow on accounts with Head Office or through their Head Office from banks in the Head Office country.<sup>12</sup>

In examining the Guyanese experience, Thomas goes on to point out that the nature of the commercial banking system is such that 'agricultural production for the home market and small-scale industry centred on the same market find it difficult to match the existing demands and standards of the commercial banks'.<sup>13</sup>

Quite apart from the reluctance of peasants to surrender their title to land as security for loans, there is the consideration that in many instances these farmers do not in fact have sufficient proof of ownership. As L. Braithwaite puts it, 'the nature of the lower-class West Indian family, with its relatively loose organization, and its failure to achieve any legal recognition has led to the existence of a great deal of confusion in the tenure of land'.<sup>14</sup> Because of the problems of unclear title and joint ownership of land by the family, the majority of West Indian peasants have had

to exist without adequate title to the land they cultivate. Thus, from the points of view of both the nature of the capital market and the structure of peasant society, peasant producers are unable to secure the financial capital required for the expansion of production.

### **Knowledge and technology**

Plantation enterprises in the West Indies are engaged in export crop production, and peasant producers, while also producing crops for export are chiefly engaged in producing food-stuffs for domestic consumption. The legacy of plantation export production has resulted in the accumulation of a considerable body of technical knowledge relating to the production of export crops. Both the plantations and governments in the region have invested significantly in research related to export crop production, whereas little or no technical knowledge exists regarding peasant-grown commodities. D. Edwards has shown that agricultural research in Jamaica has been geared excessively towards export crop production. 'The volume of research effort . . . directed to the problems of sugar cane and bananas was substantially greater than the average for all the other products.'<sup>15</sup>

It is not surprising, therefore, that the level of technology in peasant production tends to be much lower than that of the plantations. Lack of knowledge combined with low levels of productivity and incomes account for the gross disparities in levels of technology. These disparities are revealed by the following data: farms of over 500 acres use on the average 23 h.p. of tractor power and 18 tonnes of fertilizer per 100 acres of cultivated land, whereas farms of under 5 acres use 0 h.p. of tractor power and only 2.5 tonnes of fertilizers on the average per 100 acres.<sup>16</sup>

Whereas plantations have the resources to invest in agricultural research, individual peasants do not, and have to rely on the output of government research. But because of the importance of export crops in the economies and the 'plantation psychology' of government officials, very little of government's research expenditure has been channelled into crops grown chiefly by the peasants. And whereas some efforts have been made to channel re-

search resources into peasant crops since the 1960s, these have been insufficient for what is required.

Furthermore, there are problems relating to the disparity between the perceived needs of peasants, and those of research scientists and extension officers who form the link between the scientists and the peasants. In a recent regional West Indian study, L. Coke and P. Gomes point out:

the small farmers' perception of the extension service deviates strongly from the ideal model of a two-way conduit for dissemination of research findings and articulation of farmers' problems.<sup>17</sup>

The findings of Coke and Gomes confirm that 'most (peasant) farmers regard parents and grandparents as the primary, comprehensive sources of knowledge about farming.'<sup>18</sup>

### **The static position of the peasantry**

From the discussion in the foregoing it seems evident that the scope for advancement of the peasantry is severely restricted by the control of plantations over the basic agricultural resources—in particular, land and capital. The limited access of peasants to these resources means that over time peasant production will continuously fall behind the growth of peasant population, with the result that the latter will be forced to migrate or increasingly engage in wage work on the plantations. Given the historical and psychological reluctance of the peasantry to engage in work on the plantations and the present limited migration opportunities, speculations on the possibility for yet another peasant revolt sometime in the future are not far-fetched. Such a revolution would aim to give peasant farmers access to resources now controlled by the plantations and which are at present not within their grasp.

The pattern of peasant-plantation resource competition described above for Jamaica applies with some modification to many of the other West Indian territories. In the case of land, the situation may be more acute in Barbados and St Kitts, but a country like Guyana still has considerable land resources to accommodate both peasants and plantations, and there is no evidence of excessive peasant population pressure on land in Trinidad. Even though



Bernard Lodge Sugar Co-operative, near Spanishtown, Jamaica.

foreign-owned plantations are not important in Barbados and in the Leeward and Windward Islands, the nature of the commercial banking system with its bias against peasant production, makes the situation similar to that of Jamaica and Guyana. The position with respect to knowledge and technology is the same throughout the entire region.

In addition to the resource bias, several policy considerations and institutional arrangements serve further to impede the development of the peasantry in the West Indies. In relation to marketing and prices, for example, we find that because of the plantation legacy the infrastructure for the processing and distribution of export crops is highly developed while that for domestic output is not. Again, most of the export crops have guaranteed markets in the metropole (often with negotiated prices that bear some relation to the costs of production, as for sugar) while peasant production for the domestic market is forced to compete with food imports from other countries. Furthermore, a

great deal of foreign economic relations are fostered by government activity which brings benefits to export producers. It is hardly surprising, therefore, that even the peasants participate significantly in export crop production and in so doing are brought into further dependence on plantation activity. In the case of sugar cane, for example, peasant production depends on processing facilities provided by plantations. And even though sugar production is circumscribed by governmental regulations, this dependence still limits the extent to which peasants can benefit from the processing of raw materials they produce.

On balance then, it seems reasonable to conclude that peasant development in the West Indies remains constrained by the institutional legacy of the plantation system. So long as the agricultural resources of the region remain as scarce as they have been in the past, the peasantry are unlikely to secure a sufficient base for expansion of production and advancement of their standards of living. Unless some



revolutionary change occurs, the position of the peasantry is likely to remain static for some time to come.

## Patterns of change and alienation<sup>19</sup>

The dichotomy between plantations and peasants remains firmly entrenched everywhere. With the exception of Cuba, no attempts have been made to introduce programmes of land reform anywhere in the region.

The general pattern of change shows the following main trends: increasing control of farmland by plantations at the expense of small farmers; concentration of plantation land among fewer owners; increasing capitalization of plantations; improvements in production techniques by plantations; fragmentation of land in the peasant sectors; insignificant changes in techniques of peasant production; often a reduction in the number of peasants and a decline in the land farmed by them.<sup>20</sup>

Essentially, the position of the peasantry at any point in time is directly dependent on the plantation sector. In addition, plantations have direct control over the lives of rural wage workers, many of whom are small peasants, as noted earlier. Changes within the agricultural sector need, therefore, to be analysed in terms of the interaction between these three basic groups. Peasants are in direct competition for land with plantations and since many of them work on plantations part-time, they are also in competition for wage work with the rural proletariat. The latter have very few alternative economic opportunities—government rural public works schemes offer some wage opportunities; but political party patronage is the decisive factor on who gets a share of that cake.

Plantations then must be seen as being the chief institutions affecting the relative fortunes of both peasants and rural proletariat. As the plantations increase in economic importance, this influence becomes more marked. Expanding size, increasing capitalization and the modernization of technology have adverse effects on the other two rural groups. Less land becomes available to the peasantry and less labour becomes available to the rural proletariat and small peasants. The process results in

increasing alienation of these two groups which are already on the margins of society. But the degree of alienation varies between the two groups.

For purposes of analysis, it is useful to make a distinction between the 'margin of subsistence' and 'the margin of survival'. The margin of subsistence represents standards of living (consumption) which are barely tolerable by civilized human standards but which can be achieved by the individual with the resources at his command. The main index here is the prevalence of malnutrition. The margin of survival represents levels which are intolerable—i.e. the individual must either rely on the goodwill of others or scuffle in order to survive.<sup>21</sup> Undernutrition (hunger) is a prevalent condition of people on this margin.

For the West Indies as a whole, the 'small' peasant is on the margin of subsistence. The extent of malnutrition varies seasonally with availability of fruit, legumes and vegetables, but generally, meat, dairy products and fish are scarce diet items. The rural proletariat are, for the most part, on the margin of survival; again, on a seasonal basis as opportunities for sharing exist. Over time, the position of the peasantry shifts with changes in the fortunes of the plantation sector. During periods of plantation expansion, the peasantry is forced back closer to the margin of survival. The opposite shift takes place during periods of plantation contraction. The position of the rural proletariat remains static over time—on or around the margin of survival.

Tables 1 and 2 provide a summary of census and survey data showing the position of the peasantry in relation to land, and relative to plantations. The small peasant is assumed to correspond to the size group of less than 5 acres; the plantation falls in the size group of over 500 acres. (Exceptions to this general rule of thumb should be made for smaller islands like Barbados where a farm of over 100 acres is a plantation. But no effort is being made at that kind of refinement in the present exercise.) Table 2 shows the size group distribution of all farms by territory.

Looking at the data in these two tables reveals the dismal position of the peasantry. Everywhere the small peasants (less than 5 acres) dominate in number but they have only

TABLE 1. Relative numbers of farms (per cent)

| Territory                        | Year | Size group (acres) |      |        |         |       | Total |
|----------------------------------|------|--------------------|------|--------|---------|-------|-------|
|                                  |      | < 5                | 5-25 | 25-100 | 100-500 | > 500 |       |
| Belize <sup>1</sup>              | —    | —                  | —    | —      | —       | —     | —     |
| Barbados                         | 1961 | 98.3               | 0.8  | 0.2    | 0.5     | 0.2   | 100   |
| British Virgin Islands           | 1961 | 36.6               | 52.7 | 9.5    | 1.3     | 0.0   | 100   |
| Guyana <sup>1</sup>              | —    | —                  | —    | —      | —       | —     | —     |
| Jamaica                          | 1968 | 78.6               | 19.4 | 1.6    | 0.4     | 0.2   | 100   |
| <i>Leeward Islands</i>           |      |                    |      |        |         |       |       |
| Antigua/Barbuda                  | 1961 | 91.1               | 7.7  | 0.59   | 0.4     | 0.26  | 100   |
| Montserrat                       | 1961 | 92.7               | —    | 6.5    | —       | 0.7   | 100   |
| St Kitts/Nevis/Anguilla          | 1961 | 94.5               | 3.9  | 0.7    | 0.5     | 0.45  | 100   |
| Trinidad and Tobago <sup>2</sup> | 1963 | 46.5               | 46.8 | 5.3    | 1.1     | 0.3   | 100   |
| <i>Windward Islands</i>          |      |                    |      |        |         |       |       |
| Grenada                          | 1961 | 89.7               | 8.8  | 0.9    | 0.5     | 0.1   | 100   |
| Dominica                         | 1961 | 75.2               | 21.5 | 2.3    | 0.8     | 0.3   | 100   |
| St Lucia                         | 1961 | 82.5               | 14.9 | 1.9    | 0.6     | 0.2   | 100   |
| St Vincent                       | 1961 | 89.0               | 10.1 | 0.6    | 0.2     | 0.1   | 100   |

1. Data not available.

2. Provisional estimates for holdings of 1 acre and over (excluding land owned by government).

TABLE 2. Relative area in farms (per cent)

| Territory                        | Year | Size group (acres) |      |        |         |       | Total |
|----------------------------------|------|--------------------|------|--------|---------|-------|-------|
|                                  |      | < 5                | 5-25 | 25-100 | 100-500 | > 500 |       |
| Belize <sup>1</sup>              | —    | —                  | —    | —      | —       | —     | —     |
| Barbados                         | 1961 | 13.4               | 2.4  | 2.5    | 50.4    | 31.3  | 100   |
| British Virgin Islands           | 1961 | 5.7                | 43.7 | 34.2   | 16.4    | —     | 100   |
| Guyana <sup>1</sup>              | —    | —                  | —    | —      | —       | —     | —     |
| Jamaica                          | 1968 | 14.9               | 22.1 | 8.3    | 9.9     | 44.9  | 100   |
| <i>Leeward Islands</i>           |      |                    |      |        |         |       |       |
| Antigua/Barbuda                  | 1961 | 26.7               | 9.7  | 4.4    | 17.1    | 44.2  | 100   |
| Montserrat <sup>1</sup>          | —    | —                  | —    | —      | —       | —     | —     |
| St Kitts/Nevis/Anguilla          | 1961 | 15.0               | 5.2  | 4.3    | 18.9    | 56.6  | 100   |
| Trinidad and Tobago <sup>2</sup> | 1963 | 6.9                | 30.7 | 15.1   | 16.2    | 31.1  | 100   |
| <i>Windward Islands</i>          |      |                    |      |        |         |       |       |
| Grenada                          | 1961 | 23.9               | 19.7 | 10.3   | 31.1    | 15.0  | 100   |
| Dominica                         | 1961 | 13.2               | 21.0 | 12.2   | 21.3    | 32.2  | 100   |
| St Lucia                         | 1961 | 18.0               | 19.6 | 10.2   | 17.9    | 33.8  | 100   |
| St Vincent                       | 1961 | 27.0               | 24.5 | 7.69   | 16.0    | 24.2  | 100   |

1. Data not available.

2. Provisional estimates for holdings of 1 acre and over (excluding land owned by government).

a small proportion of the farmland. On the other hand, plantations (over 500 acres) are few in number but they have a large proportion of farmland. Barbados is perhaps the extreme case. There, small peasants are 98 per cent of all farmers and they exist on 13 per cent of all farmland; while the plantations (over 100 acres) are less than 1 per cent of all farmers with 82 per cent of all farmland. These tables clearly reveal the existing land alienation of the peasantry throughout the region.

Alienation of the peasantry has been increasing as a result of the incursion of monopoly capital in non-agrarian activities like mining and tourism. Table 3 provides some evidence of this for Jamaica. There we see that the number of small peasants and the acreage farmed by them increased between 1943 and 1961; but average farm size remained virtually unchanged. Over the same period, the number of plantations declined drastically; acreage farmed also declined but not to the same

degree, so that average farm size increased appreciably. It is important to note that the total area in farms declined at about one-half the rate of decline in plantation land.

Now these trends tell a story. Non-agrarian capitalism (mining and tourism) came on the scene in Jamaica during the period covered by the data. Also, the revolt of 1938 resulted in intensified government policy to provide land for the peasantry—through 'land settlement' schemes. In addition to this, the population of Jamaica increased from 1.3 million in 1943 to the present 2.3 million.

The decline in total farmland shown in Table 3 is chiefly a result of mining developments. Metropolitan (United States and Canada) bauxite companies purchased considerable areas of land. And a good share of this was former plantation land—particularly in St Ann, traditionally a plantation ('pen-keeper'—i.e. cattle) parish. Nevertheless, the average size of plantations increased as the remaining plantation land became more concentrated among fewer plantations. The marked increase in small-peasant acreage between 1943 and 1968 is directly attributable to the government land settlement scheme. The government purchased several derelict plantations and subdivided them for sale to peasants. The decline in plantation acreage, then, is partly a result of the invasion of non-agrarian capitalism, and partly a result of peasant substitution.

Although peasant acreage increased, the average size of peasant holdings remained static. In short, the rate of growth of peasant farmers kept pace with the rate of growth of land operated by them. This is a crude

indication that the economic position of the peasantry has remained virtually unchanged since 1943.<sup>22</sup> If we assume that average household size of small peasants is five, then in 1968, the 150,000 small farms provided subsistence for 750,000 people on 15 per cent of Jamaica's farmland.

Back in 1943, 530 plantation owners earned profits from 60 per cent of all farmland. They also benefited from capital gains on land values since that time. Census data reveal that productivity of plantation farmland tripled between 1943 and 1961. It is clear then that the economic position of plantation owners has improved appreciably, in both absolute and relative terms.

To return to the general West Indian situation, and the special case of the sugar plantation, we find an interesting interplay between plantations and some of the peasantry, i.e. those engaged in cane farming. In that game again, plantations win and peasants lose. During the plantation labour crisis following Emancipation, and after numerous efforts to solve that crisis, plantation owners finally resolved to encourage peasant production of cane to provide the necessary through-put for their factories. This is the genesis of peasant cane farming in the West Indies. It began towards the end of the nineteenth century and today cane farmers (many of whom are peasants) produce half of the sugar-cane output in Jamaica and a significant share of the output in Trinidad and Belize.

Howard Johnson has analysed the origins of cane farming in Trinidad. He demonstrates the importance of the planter class to its

TABLE 3. Peasant and plantation land and labour, Jamaica, 1943-68<sup>1</sup>

|  | 1943           |             |           | 1961           |             |           | 1968           |             |           |
|--|----------------|-------------|-----------|----------------|-------------|-----------|----------------|-------------|-----------|
|  | Small peasants | Plantations | Total     | Small peasants | Plantations | Total     | Small peasants | Plantations | Total     |
| Number of farms  | 116 200        | 532         | 149 142   | 113 239        | 350         | 158 938   | 149 703        | 295         | 190 582   |
| Area (acre)  | 157 363        | 1 068 000   | 1 836 668 | 201 093        | 774 000     | 1 706 561 | 223 818        | 676 426     | 1 508 000 |
| Average size   | 1.4            | 2 000       | —         | 1.8            | 2 210       | —         | 1.5            | 2 340       | —         |
| Employment<br>(number per 100<br>acres cultivated<br>land) | 69             | 17          | 44        | 84             | 17          | 42        | —              | —           | —         |

1. Census survey data. 'Small peasants' refer to a farm size of less than 5 acres. 'Plantations' refer to a farm size of more than 500 acres. The 'total' columns refer to all farms; it thus includes size groups not shown in the table (i.e. farms of 5-500 acres).



Linstead Market, Jamaica, the subject of a well-known folk song 'Carry me Ackees, go a Linstead Market'. Camera Press.

development. Planters around the turn of the twentieth century often provided land, as well as advancing capital and sometimes even supplied labour, to the cane farmers. Their encouragement of cane farming is explained by the fact that they anticipated certain benefits from its establishment. . . . Low prices emphasized the need for more economical sugar production. However, the savings effected were mainly in the manufacturing process.<sup>23</sup> Cane farming involves more risk than processing does. Furthermore, since factory owners are in a monopolistic position, they can determine the price paid to farmers growing cane. From the beginning until now, the price was set to the disadvantage of cane farmers. Johnson concludes that 'the cane farmer was plagued with three major problems—lack of capital, inadequate transport facilities and an unsatisfactory cane-

price formula. These difficulties have persisted up to the present.' The cane farmer is, in essence, a plantation worker who works for the plantation on his own land. His fortunes are bound up directly with those of the plantation.

The rural proletariat suffers a greater degree of alienation than the peasantry. Plantation strategy since Emancipation is to create a labour surplus in each economy. This was engineered by importing labour (under indenture) and by land monopoly. A more recent strategy is mechanization—the substitution of capital for labour as the labour force became unionized subsequent to the revolts of the 1930s. According to Table 3, plantations in Jamaica maintained the same rate of employment per 100 acres of cultivated acreage; the number of workers employed increased from about 27,000 in 1943 to about 32,000 in 1961—

nearly 20 per cent. Meanwhile, output per man working on plantations rose about 64 per cent over the same period. The real wage of plantation workers has remained virtually static.

In Jamaica, cultivated acreage on plantations actually increased during this period (from 160,000 acres to 191,000 acres). It will be recalled that total plantation farmland decreased. Improvements in technology—both mechanical (labour-saving) and biological—chemical (land-saving) explain the sharp rise in productivity, per man and per acre. But the plantation worker had gained nothing from these improvements.

It is important to note here again that most of these improvements resulted from public sector investments, and that the industry is subsidized by governments throughout the region. The technological improvements have served to aggravate the employment situation. Machine capital displaces labour directly. So too does chemical technology which replaces workers with weed-killers.

West Indian economies are all labour-surplus economies. Carmen McFarlane gave estimates of open 'long-term unemployment' (Table 4).<sup>24</sup>

TABLE 4

|                 | Per cent of<br>labour force |             | Per cent of<br>labour force |
|-----------------|-----------------------------|-------------|-----------------------------|
| Jamaica         | 23.4                        | Grenada     | 22.3                        |
| Trinidad-Tobago | 15.6                        | St. Vincent | 22.8                        |
| Barbados        | 19.5                        | Dominica    | 16.1                        |
| St Lucia        | 17.5                        | Others      | n.a.                        |

In such situations, monopolistic buyers of labour services, as plantations are in specific localities, do not need to pay wages higher than subsistence levels. The more so where plantations and other capitalist enterprises monopolize land (thus restricting labour from own-account production) and where there are limited job opportunities available elsewhere.

The rural proletariat (which includes some small peasants, as noted earlier) earn income working on plantations, on the wharves shipping plantation products, and in other plantation-related activities; they work as well with middle and big peasants, with other small capitalists, and with government public works.

The plantation worker suffers the most. Income is seasonal; and out-of-crop, the worker lives off credit in order to survive. Crop-time work pays back this credit in good years; and it may not during bad years. The margin of survival is most pronounced among this category of worker. But all rural workers are pushed on to the margin of survival when there is depression in the plantation sector. For it is in that sector that economic action begins to multiply and to decelerate. And since many small peasants are wage workers on plantations, they suffer both as peasants and as proletarians.

## Concluding observations

The West Indian peasantry was born in the womb of the slave plantation. The 'provision grounds' of the slaves and the illegal independent Maroon mountain settlements are the precursors of the peasantry of today. And although the peasantry has emerged as a sturdy and viable social class of food producers, the possibilities for their material and social advancement are constrained by factors which derive from the persistent dominance of the plantation mode of production and exchange. Accordingly, they remain among the poorest classes in Caribbean society.

Economic and social advancement has come to them only through activities off the land. Firstly, through education, children of the peasantry have achieved significant improvements in standards of living. Occupational mobility has been facilitated by expanded state ('public') sectors with the coming of constitutional advancement to independence. In most countries, the state is the single largest employer of labour. Secondly, external migration has provided opportunities for peasants and their families to improve their lot. Remittances from West Indian migrants are an important source of foreign exchange for these countries, as well as being an important source of income for families remaining behind. These remittances provide for both consumption and investment, for the migrants think in terms of returning home eventually to their own 'house and land'.

The peasantry that remains on the land consists mainly of older people. The average

age of small farmers in Jamaica, for example, is 55. And the younger farmers are typically engaged in other non-farm activities part-time and/or in illegal production of marijuana (*gan-ga*). Non-farm activities include transportation, distribution, construction, and services of various kinds. Multiple occupationality is a feature of Caribbean peasantries.

As a consequence of this demise of the peasantry, food import dependence has increased. Table 5 provides some data on the degree of dependence. What evidence there is indicates that, as the current economic crisis deepens, malnutrition has increased. Although mixed cropping is a feature of peasant production, the emphasis within this pattern continues to favour export crop production, for reasons outlined above. Food production for the home market is discouraged by relatively low prices, competition from imported food supplies, inadequate marketing arrangements and insufficient input supplies.

The conclusion is inescapable: the domi-

nance of the plantation mode of production is the single most limiting factor inhibiting peasant development and the associated necessary economic and social transformation in the Caribbean.

TABLE 5. Import dependencies of selected Caribbean countries

| Countries           | Year | Population | Percentage nutrients from external sources |         |
|---------------------|------|------------|--|---------|
|                     |      |            | Energy                                     | Protein |
| Guyana              | 1970 | 793 000    | 34   | 42      |
| Trinidad and Tobago | 1970 | 1 059 825  | 49   | 71      |
| Barbados            | 1971 | 253 000    | 58   | 76      |
| St Lucia            | 1970 | 123 808    | 65   | 67      |
| Grenada             | 1975 | —          | 78   | 70      |
| Montserrat          | 1978 | 12 000     | 90   | 79      |
| Jamaica             | 1972 | 2 138 000  | 46   | 62      |

Source: P. I. Gomes, *Toward an Assessment of Transnational Capital and Food Importation on Nutrition: A Caribbean Case Study*, p. 23, St Augustine, Trinidad and Tobago, UWI, 1983.

## Notes

1. Emancipation came first in the English colonies in the 1830s, in the French in the 1840s, and in the Spanish and Portuguese in the 1880s.

2. This section is a revised version of an earlier paper, 'Aspects of the Present Conflict between the Plantation and the Peasantry in the West Indies', *Caribbean Quarterly*, Vol. 18, No. 1, March, 1972, pp. 47-58.

3. A. V. Norton and G. E. Cumper, '“Peasant”, “Plantation” and “Urban” Communities in Rural Jamaica: A Test of the Validity of the Classification', *Social and Economic Studies*, Vol. 15, No. 4, Dec. 1966, p. 342.

4. P. Redwood, *A Statistical Survey of Land Settlements in Jamaica, 1929-49*. (Mimeo.)

5. H. Brewster and C. Y. Thomas, *The Dynamics of West Indian Economic Integration*, p. 117, Jamaica, University of the West Indies, 1967.

6. G. E. Cumper, 'A Modern Jamaican Sugar Estate', *Social and Economic Studies*, Vol. 3, No. 2, Sept. 1954, p. 121.

7. A. Eyre, *Land and Population in the Sugar Belt of Jamaica*, Department of Geography, University of the West Indies, n.d. 8 pp.

8. M. G. Smith, *A Report on Labour Supply in Rural Jamaica*, Kingston, The Government Printer, 1956, 3 pp.

9. For instance, 'Some properties were paying 2/3 a hundred to pick and husk coconuts while adjoining small settlers were paying 2/6 to 3/-; but in fact, a man could make as much or more per day's work on the property at this task than on any of the small settlers' holdings.' (ibid., p. 18).

10. McMorris has argued, for example, that peasants have been rightly reluctant to take up credit opportunities which require the surrender of their title to land as a security for loans (see

C. S. McMorris, *Small Farm Financing in Jamaica*, ISER, University College of the West Indies, 1957). See also, G. Lewars, *Small Farm Financing in Guyana 1968-70*, UWI, ISER, Kingston, 1977; and 'Rural Financial Markets in Jamaica', *Social and Economic Studies*, Vol. 32, No. 1, March, 1983.

11. B. C. H. Gayle, 'The Financing of sugar by Commercial Banks in Jamaica', Department of Economics, University of the West Indies, 1968, 8 pp. (Mimeo).

12. C. Y. Thomas, *Monetary and Financial Arrangements in a Dependent Monetary Economy*, p. 8, ISER, University of the West Indies, Jamaica, 1965.

13. Ibid., p. 68.

14. L. Braithwaite, 'Social and Political Aspects of Rural Development in the West Indies', *Social and Economic Studies*, Vol. 17, No. 3, September, 1968, p. 271.

15. D. T. Edwards, 'An Economic View of Agricultural Research in Jamaica', *Social and Economic Studies*, Vol. 10, No. 3, Sept. 1961, p. 33.

16. From D. T. Edwards, 'Agricultural Development in Jamaica 1943-61', a paper presented

to the Third West Indian Agricultural Economics Conference, University of the West Indies, Jamaica, April, 1968, p. 12.

17. L. Coke and P. I. Gomes, 'Critical Analysis of Agricultural Research', *Social and Economic Studies*, Vol. 28, No. 1, March, 1979, p. 132.

18. Ibid.

19. This section is a revised extract from the author's 'Plantations, Peasants and Proletariat in the West Indies', in B. Berdichewsky (ed.), *Anthropology and Social Change in Rural Areas*, pp. 347-61, The Hague, Mouton Publishers, 1979.

20. In the main sugar producing territories, foreign corporations were until quite recently, dominant plantation owners. Tate & Lyle, the giant British sugar refining enterprise produce 100 per cent of sugar output in Belize, and had 92 per cent of that in Trinidad, and 60 per cent of that in Jamaica. In Guyana, another British corporation—Booker McConnell Ltd—produced 98 per cent of national output. Together, these two enterprises accounted for over 90 per cent of total West Indian sugar production. The Guyana Government nationalized Bookers in 1976 while Tate & Lyle sold out voluntarily to the Trinidad and Jamaica Governments in the

early 1970s. And it is now negotiating with the Belizean Government to sell out there.

21. The distinction between subsistence and survival is critical. In the West Indies, many people happen to survive because of a high propensity to share by those who can afford to subsidize others. This propensity operates at the level of family and friends, as well as on a broader social scale.

22. This inference is reasonable unless it can be demonstrated that land productivity on small farms improved substantially and that the terms of trade have shifted in favour of the peasant. Census data indicate a decline in land productivity. In any case, it is clear that the position of the peasantry relative to the plantation, has worsened over the period.

23. H. Johnson, 'The Origins and Early Development of Cane Farming in Trinidad, 1882-1906', *The Journal of Caribbean History*, Vol. 5, 1972, p. 59.

24. Carmen McFarlane, 'The Employment Situation in Overpopulated Territories in the Commonwealth Caribbean', in J. Harewood (ed.), UWI, *Human Resources in the Commonwealth Caribbean*, St. Augustine, Trinidad, 1970.

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# Professional and documentary services

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## Approaching international conferences

No further details concerning these meetings can be obtained through this *Journal*.

### 1985

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|---------------------------|--|--|
| 9-12 September            | <i>Sunderland<br/>(United Kingdom)</i> | Institution of Environmental Sciences: International Conference on the Nature and Teaching of Environmental Studies and Sciences in Higher Education<br><i>Conference Secretary, c/o Dept. of Geography and History, Sunderland Polytechnic, Forster Buildg., Chester Road, Sunderland, Tyne and Wear (United Kingdom)</i> |
| 16-20 September           | <i>Guildford<br/>(United Kingdom)</i>  | British Sociological Association Summer School 1985: Sociological Research in 1980s<br><i>S. Arber and G. Nigel, BSA Summer School 1985, Dept. of Sociology, University of Surrey, Guildford, Surrey GU2 5XH (United Kingdom)</i>  |
| Autumn                    | <i>Cairo</i>                           | International Peace Research Association: 11th General Conference<br><i>Secretary-General, Prof. Yoshikazu Sakamoto, Faculty of Law, University of Tokyo, Bunkyo-ku, Tokyo 113 (Japan)</i>   |
| 23-27 September           | <i>Rome</i>                            | International Federation of Catholic Universities: Symposium on Inter-culturation<br><i>Internat. Fed. of Catholic Universities, Piazza della Pilotta 4, 00187 Roma (Italy)</i>  |
| 7-10 October              | <i>Budapest</i>                        | International Federation for Housing and Planning: International Congress IFHP, 43 Wassenaarseweg, 2596 CG Den Haag (The Netherlands)  |
| 13-19 October             | <i>Seignosse<br/>(France)</i>          | Inter-University European Institute on Social Welfare: Symposium (Theme: The Crisis of the Welfare State)<br><i>IEIAS, 179 rue du Débarcadère, 6001 Marcinelle (Belgium)</i>   |
| 30 October-<br>2 November | <i>Geneva</i>                          | Centre for Applied Studies in International Negotiations: Seminar on the Conditions for the Absorption of Advanced Technologies in Developing and Developed Countries<br><i>CASIN, 11a Avenue de la Paix, CH-1202 Genève (Switzerland)</i>   |

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|---------------------------|-------------------------------------|---|
| 31 October–<br>2 November | <i>Brussels</i>                     | International Development Foundation: European Conference on the EEC and the ACP at a Crossroad<br><i>International Development Foundation, P.O. Box 24234, Washington, D.C. 20024 (United States)</i>  |
| 20–22 November            | <i>New York</i>                     | Association for the Advancement of Policy, Research and Development: The United States and the Third World—A Mid-Decade Review<br><i>AAPRD, P.O. Box 24234, Washington, D.C. 20024 (United States)</i>  |
| 20–22 November            | <i>Maastricht<br/>(Netherlands)</i> | European Centre for Work and Society: European Conference on the Role of Trade Unions in the Coming Decade<br><i>European Centre for Work and Society, Secret. of the 1985 Conference, Hoogbrugstraat 43, P.O. Box 3073, 6202 NB Maastricht (The Netherlands)</i> |

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## 1986

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|                |                                     |   |
|----------------|-------------------------------------|---|
| 16–21 February | <i>Tel Aviv</i>                     | International Congress on Psychiatry, Law and Ethics: 2nd International Congress<br><i>Internat. Congress on Psychiatry, Law and Ethics, P.O. Box 394, Tel Aviv 61003 (Israel)</i>  |
| 1–4 April      | <i>Braga<br/>(Portugal)</i>         | 13th European Congress for Rural Sociology<br><i>Host Committee, Dr M. V. Cabral, 1600 Lisbon (Portugal)</i>  |
| 3–5 April      | <i>San Francisco</i>                | Population Association of America: Meeting<br><i>PPA, P.O. Box 14182, Benjamin Franklin Station, Washington, D.C. 20044 (United States)</i>   |
| 21–24 May      |                                     | International Development Foundation: Third European Regional Conference<br><i>Internat. Development Foundation, P.O. Box 24234, Washington, D.C. 20024 (United States)</i>   |
| 2–4 July       | <i>Vienna</i>                       | International Institute for Audio-visual Communication and Cultural Development: Music Policies in the 80s<br><i>MEDIACULT, Internat. Institute for Audio-visual Communication and Cultural Development, Metternichgasse 12, A-1030 Wien (Austria)</i>  |
| 10–16 August   | <i>Syracuse<br/>(United States)</i> | International Association for Ecology: 6th International Congress (Theme: Global Connexions in Ecological Theory and Practice)<br><i>Chairman, 6th Internat. Congress of Ecology, State University of New York, College of Environmental Science and Forestry, Syracuse, N.Y. 13210 (United States)</i> |
| 25–30 August   | <i>Hamburg</i>                      | 32nd International Congress for Asian and North African Studies<br><i>32nd ICANAS Congress Organization, Hamburg Messe und Congress GmbH, Postfach 30 24 80, D-2000 Hamburg (Federal Republic of Germany)</i>   |

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|-------------------------|----------------------------|---|
| 5-11 October            | <i>Cannes<br/>(France)</i> | 13th World Energy Conference (Theme: Energy—Needs/Expectations)<br><i>E. Rutley, Secr.-Gen., WEC, 34 St. James's Street, London SW1A 1HD<br/>(United Kingdom)</i> |
| November or<br>December | <i>New Delhi</i>           | International Economic Association: 8th World Congress<br><i>IEA, 4 rue de Chevreuse, 75006 Paris (France)</i>  |

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## Books received

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### Social psychology

Handel, Gerald (ed.). *The Psychosocial Interior of the Family*, 3rd ed. New York, Aldine Publishing Company; Berlin, Walter de Gruyter and Co., 1985. 520 pp., index, bibliog. Cloth: DM.175; \$49.95; Board: DM.70; \$19.95.

---

### Theory of knowledge

Borillo, Mario. *Informatique pour les sciences de l'homme: Limites de la formalisation du raisonnement*. Brussels, Pierre Mardaga, 1984. 210 pp., figs., tables, bibliog. 156 francs.

---

### Religion

Rumpf, Louis. *Chrétiens devant l'injustice: Question œcuménique et responsabilité personnelle*. Geneva, Labor et Fides, 1985. 117 pp. (La parole et les hommes, 6.)

---

### Social sciences

Blalock, H. M., Jr. (ed.) *Causal Models in Panel and Experimental Designs*. New York, Aldine Publishing Company, 1985. 287 pp. figs., tables, bibliog., index. DM87; \$24.95.

Hilhorst, J. G. M.; Klatter, M. (eds.). *Social Development in the Third World: Level of Living Indicators and Social Planning*. London; Sydney; Dover, New Hampshire, Croom Helm, 1985. 233 pp., figs., tables, bibliog., \$19.95.

Trent, John; Lamy, Paul (eds.). *Global Crises and the Social Sciences: North American Perspectives*. Ottawa, University of Ottawa Press; Paris, Unesco, 1984. 276 pp., tables.

---

### Sociology

Billeter, Jean-François; Etienne, Gilbert; Maurer, Jean-Luc. *Sociétés asiatiques: Mutations et continuité — Chine — Inde — Indonésie*. Paris, Presses Universitaires de France for the Institut Universitaire des Hautes-Études Internationales, Geneva, 1985. 107 pp., bibliog.

Comité National de Défense contre l'Alcoolisme. *Université d'été, Nice, 25-29 juin 1984: Alcool et religion*. Paris, Comité National de Défense contre l'Alcoolisme, 1985. 197 pp. 60 francs. (Les cahiers du CNDCA, 1985, 2.)

Johnson, Norman (ed.). *Marital Violence*. London; Boston; Melbourne; Routledge & Kegan Paul, 1985. 195 pp., tables. £8.95. (Sociological Review Monograph, 31.)

Munín, Alicia; Schlüter, Regina G. *Turismo y sexo: Aproximación a un estudio sobre prostitución y turismo en Argentina*. Buenos Aires, Centro de Investigaciones en Turismo, 1985. 67 pp.

---

### Population

Commission Économique pour l'Afrique. *Division de la Population. Séminaire national sur la population et le développement, Côte d'Ivoire, Abidjan, 13-18 déc. 1982: Rapport*. Addis Ababa, Commission Économique pour l'Afrique, January 1984.

393 pp., graphs, tables. (E/ECA/POP/12.)

United Nations. Department of International Economic and Social Affairs. *Estimates and Projections of Urban, Rural and City Populations, 1950-2025: The 1982 Assessment*. New York, United Nations, 1985. 147 pp., figs., tables. (ST/ESA/SER.R/58.)

—. —. *Migration, Population Growth and Employment in Metropolitan Areas of Selected Developing Countries*. New York, United Nations, 1985. 94 pp., tables. (ST/ESA/SER.R/57.)

—. —. *World Population Prospects: Estimates and Projects as Assessed in 1982*. New York, United Nations, 1985. 521 pp., tables. (Population Studies, 86.)

---

### Political science

Aleixo, José Carlos Brandi. *O Brasil e a América Central*. Brasília, Câmara dos Deputados, Coordenação de Publicações, 1984. 169 pp., tables, index.

---

### Economics

Barnes, C.; Ensminger, J.; O'Keefe, P. (eds.). *Wood, Energy and Households: Perspectives on Rural Kenya*. Stockholm, The Beijer Institute; Uppsala, The Scandinavian Institute of African Studies, 1984. 213 pp., map, tables., index. (Energy, Environment and Development in Africa, 6.)

Gakou, M. Lamine. *Crise de l'agriculture africaine*. Paris, Editions Si-

lex; 1984. 193 pp., tables., bibliog. 60 francs. (Perspectives africaines.)

**Gandier, Maryse; Greve, Rose Marie; Grootings, Peter; Hethy, Lajos.** *Management, Work, Leisure: A Review of Research Trends in Western Europe.* Vienna, European Coordination Centre for Research and Documentation in Social Sciences, 1985. 65 pp., bibliog.

**Immler, Hans.** *Natur in der ökonomischen Theorie.* Opladen, Westdeutscher Verlag GmbH, 1985. 444 pp., bibliog., index.

**Oakley, Allen.** *Marx's Critique of Political Economy: Intellectual Sources and Evolution.* Vol. II: 1861-63. London; Boston; Melbourne, Routledge & Kegan Paul, 1985. 342 pp., bibliog., index. Cloth £16.95.

**Papadakis, J.** *Economic Theory Based on Facts.* Athens, Potamitis Press, 1984. 35 pp., figs., bibliog.

**Peet, Richard.** *Manufacturing Industry and Economic Development in the SADCC Countries.* Stockholm, The Beijer Institute; Uppsala, The Scandinavian Institute of African Studies, 1984. 119 pp., figs., tables, bibliog., index. (Energy, Environment and Development in Africa, 5.)

**Vagogne, Joseph.** *Les professions libérales.* Paris, Presses Universitaires de France, 1984. 127 pp., tables, bibliog. (Que sais-je ?)

**Wisner, Alain.** *Quand voyagent les usines: Essai d'anthropotechnologie.* Paris, Syros, 1985. 195 pp. 65 francs. (Atelier futur series.)

**Yachir, Fayçal.** *Crise et redéploiement dans la sidérurgie.* Paris, Edi-

tions Silex, 1984. 149 pp., bibliog. 70 francs. (Perspectives africaines.)

## Law

**Lampe, Ernst-Joachim (ed.).** *Das sogenannte Rechtsgefühl.* Opladen, Westdeutscher Verlag, 1985. 339 pp., tables, bibliog., index. (Jahrbuch für Rechtssoziologie und Rechtstheorie, 10.)

## Social relief and welfare

*L'Adoption, Lieux de l'enfance,* No. 1/2, 1985. Toulouse, Privat, 1985. 268 pp. 80 francs.

**Lewin, B.** *Sex and Family Planning: How we Teach the Young—Report on a Study.* Copenhagen, World Health Organization, Regional Office for Europe, 1984. 170 pp., tables, bibliog. 19 Swiss francs. (Public Health in Europe, 23.)

**Skeet, Muriel.** *La protection de la santé des personnes âgées: Bilan des activités de l'OMS en Europe.* Copenhagen, Organisation mondiale de la Santé, Bureau Régional de l'Europe, 1984. 134 pp., figs., tables, bibliog. 11 Swiss francs. (La santé publique en Europe, 18.)

## Applied sciences, technology

**Ash, J.; Chubb, P. A.; Ward, S. E. (eds.).** *Communication, Storage and Retrieval of Chemical Information.* Chichester, Ellis Horwood Ltd; New York; Ontario; Brisbane, John Wiley and Sons, 1985. 297 pp., figs., gloss., bibliog., index. £32.50. (Ellis Horwood Series in Information Science.)

**Rahim, Eric; Khan, Rafiq.** *Corrugated Board and Box Production.* Edinburgh, Scottish Academic Press, 1985. 91 pp., tables, index. £3.95. (David Livingstone Series on Choice of Technique in Developing Countries, 9.)

**Shirai, Yoshiaki; Tsujii, Jun-ichi.** *Artificial Intelligence: Concepts, Techniques and Applications.* Chichester; New York; Brisbane; Toronto; Singapore, John Wiley 1985. 177 pp., figs., tables, bibliog., index. £10. (Wiley Series in Computing.)

## Land planning

**France. Commissariat Général du Plan.** *Rapport du groupe de travail Disparités spatiales.* Paris, La Documentation Française, 1984. 167 pp., map. 50 francs.

## Literature

**Alvarez-Pereyre, Jacques.** *The Poetry of Commitment in South Africa,* translated from the French by Clive Wake. London; Ibadan; Nairobi; Heinemann, 1984. 278 pp., bibliog., index. (Studies in African Literature.)

## Geography

**France. Commissariat Général du Plan.** *Rapport de la Commission nationale sur l'information géographique.* Paris, La Documentation Française, 1984. 156 pp., tables, index.

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## Recent Unesco publications

(including publications assisted by Unesco)

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*Africa and the Second World War: Reports and Papers of the Symposium organized by Unesco, Benghazi, Libyan Arab Jamahiriya, 10-13 November 1980.* Paris, Unesco, 1985. 158 pp., bibliog. 45 F. (The General History of Africa, Studies and Documents, 10.)

*Earthquake Prediction: Proceedings of the International Symposium on Earthquake Prediction.* Paris, Unesco; Tokyo, Terrapub, 1984. 995 pp., figs., tables. 110 F.

*International Bibliography of the Social Sciences: Economics/Bibliographie internationale des sciences sociales: Science économique.* Vol. 30, 1981. London; New York, Tavistock Publications; Paris, Offilib, 1983. 522 pp. 560 F.

*International Bibliography of the Social Sciences: Political Science/Bibliographie internationale des sciences sociales: Science politique.* Vol. 30, 1981. London; New York, Tavistock Publications; Paris, Offilib, 1984. 534 pp. 560 F.

*International Bibliography of the Social Sciences: Social and Cultural Anthropology/Bibliographie internationale des sciences sociales: Anthropologie sociale et culturelle.* Vol. 26, 1980. London; New York, Tavistock Publications; Paris, Offilib, 1983. 528 pp. 560 F.

*International Bibliography of the Social Sciences: Sociology/Bibliographie internationale des sciences sociales: Sociologie.* Vol. 31, 1981. London; New York, Tavistock Publications; Paris, Offilib, 1983. 382 pp. 560 F.

*The Management of Human Settlements in Hot Dry Climates: Final Report of a Seminar sponsored by*

*UNESCO, ALECSO and UNCHS.* Paris, Unesco; Khartoum, Sudanese National Commission for Education, Science and Culture, November 1984. 161 pp., illus., tables.

*Measuring Readership: Rationale and Technique,* by John T. Guthrie and Mary Seifert. Paris, Unesco, 1984. 116 pp., figs., tables, bibliog.

*Political Science in Asia and the Pacific: Status Reports on Teaching and Research in 10 Countries,* edited by Takeo Uchida. Bangkok, Unesco Regional Office for Education in Asia and the Pacific, 1984. 372 pp. (Social and Human Sciences in Asia and the Pacific, RUSHSAP, Series of Occasional Monographs and Papers, 10).

*Project Evaluation: Problems of Methodology.* Paris, Unesco, 1984. 141 pp. 45 F.

*Science and Scientific Researchers in Modern Society,* by John P. Dickinson and C. Chem. Paris, Unesco, 1984. 254 pp., bibliog., index. 90 F.

*Social Sciences in Asia and the Pacific.* Paris, Unesco, 1984. 612 pp., figs., tables. 150 F.

*Social Science Methods, Decision-making and Development Planning.* Paris, Unesco, 1984. 103 pp., tables. 30 F. (Socio-economic Studies, 8.)

*Social Science Research and Women in the Arab World.* Paris, Unesco; London; Dover, Frances Pinter, 1984. 175 pp., tables. 75 F.

*Teaching and Research in International Law in Asia and the Pacific: Report of a Regional Consultation Meeting Including Nine Country Status Surveys.* Bangkok, Unesco

Regional Office for Education in Asia and the Pacific, 1985. 264 pp. (RUSHSAP Series of Occasional Monographs and Papers, 11.)

*Teaching and Research in Philosophy: Africa.* Paris, Unesco, 1984. 287 pp. 75 F.

*Teaching Methodologies in Population Education: Abstract-Bibliography Series, 5.* Bangkok, Unesco Regional Office for Education in Asia and the Pacific, 1984. 105 pp., index.

*Towards International Youth Year. Round Table on Youth in the 1980s, Costinesti, Romania, 31 May-5 June 1982: Final Report, Recommendations and Choice of Documents.* Paris, Unesco, 1985. 94 pp.

*Unesco Statistical Digest: A Statistical Summary of Data on Education, Science and Technology, Culture and Communication, by Country, 1984/Résumé statistique de l'Unesco: Données par pays sur l'éducation, la science et la technologie, et la culture et la communication.* Paris, Unesco, 1984. 335 pp., tables. 36 F.

*Unesco Statistical Yearbook, 1984/Annuaire statistique de l'Unesco/Anuario estadístico de la Unesco.* Paris, Unesco, 1984. 1060 pp. 300 F.

*United Nations Law Making: Cultural and Ideological Relativism and International Law Making for an Era of Transition,* by Edward McWhinney. Paris, Unesco; New York; London, Holmes & Meier, 1984. 274 pp., index. 156 F.

*Violations of Human Rights: Possible Rights of Recourse and Forms of Resistance.* Paris, Unesco, 1984. 236 pp. 65 F.

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*Women in the Villages, Men in the Towns.* Paris, Unesco, 1984. 304 pp., illus., tables. 90 F. (Women in a World Perspective.)

*World Directory of Peace Research Institutions,* 5th ed. rev. Paris, Unesco, 1984. 228 pp. 36 F. (Reports and Papers in the Social Sciences, 55.)

*World Directory of Social Science Institutions/Répertoire mondial des institutions de sciences sociales/Repertorio mundial de instituciones de ciencias sociales,* 1982. 3rd rev. ed. Paris, Unesco, 1982. 535 pp. 60 F. (World Social Science Information Services/Services mondiaux d'information en sciences sociales/Servicios mundiales de información sobre ciencias sociales, II.)

*World List of Social Science Periodicals/Liste mondiale des périodiques spécialisés dans les sciences sociales/Lista mundial de revistas especializadas en ciencias sociales,* 1982, 6th rev. ed. Paris, Unesco, 1983. 446 pp. 72 F. (World Social Science Information Services/Services mondiaux d'information en sciences sociales/Servicios mundiales de información sobre ciencias sociales, I.)



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**Barbados:** University of the West Indies Bookshop, Cave Hill Campus, P.O. Box 64, BRIDGETOWN.

**Belgium:** Jean De Lannoy, 202, avenue du Roi, 1060 BRUXELLES. CCP000-0070823-13.

**Benin:** Librairie nationale, B.P. 294, PORTO NOVO; Ets. Koudjo G. Joseph, B.P. 1530, COTONOU; Librairie Notre-Dame, B.P. 307, COTONOU.

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ções, caixa postal 9.052-ZC-02, Praia de Botafogo 188, RIO DE JANEIRO (GB).

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Hurbanovo nam. 6, 89331 BRATISLAVA. For 'The Courier' only: PNS-UED, Jindriska 14, PRAHA 1.

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**Ecuador:** *Periodicals only:* Dinacur Cia. Ltda, Santa Prisca n.º 296 y Pasaje San Luis. Oficina 101-102, Casilla 112-B, QUITO. *All publications:* Casa de la Cultura Ecuatoriana, Núcleo del Guayas, Pedro Moncayo y 9 de Octubre, casilla de correos, 3542, GUAYAQUIL; Casa de la Cultura Ecuatoriana, avenida 6 de Diciembre n.º 794, casilla 74, QUITO; Nueva Imagen, 12 de Octubre 959 y Roca, Edificio Mariano de Jesús, QUITO.

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**Finland:** Akateeminen Kirjakauppa, Keskuskatu 1, SF-00100 HELSINKI 10; Suomalainen Kirjakauppa Oy, Koivuvaarankuja 2, 01640 VANTAA 64.

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**German Democratic Republic:** Buchhaus Leipzig, Postfach 140, 701 Leipzig or international bookshops in the German Democratic Republic.

**Germany (Fed. Rep. of):** S. Karger GmbH, Karger Buchhandlung, Angerhofstr. 9, Postfach 2, D-8034 GERMERING/MÜNCHEN. 'The Courier': Mr Herbert Baum, Deutscher Unesco-Kurier Vertrieb, Besaltstrasse 57, 5300 BONN 3.

**Ghana:** Presbyterian Bookshop Depot Ltd., P.O. Box 195, ACCRA; Ghana Book Suppliers, Ltd., P.O. Box 7869, ACCRA; The University Bookshops of Ghana, ACCRA; The University Bookshop, CAPE COAST; The University Bookshop, P.O. Box 1, LEGON.

**Greece:** International bookshops (Eleftheroudakis, Kauffmann, etc.); John Mihalopoulos & Son S.A., International Booksellers, 75 Hermou Street, P.O. Box 73, THESSALONIKI; Commission nationale hellénique pour l'Unesco, 3, rue Akadimias, ATHENA.

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